
Lower Passaic River Restoration Project

2012 SEDIMENT TOXICITY REFERENCE DATA FOR THE LOWER PASSAIC RIVER STUDY AREA **FINAL**

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October 11, 2018

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Acronyms

AFDW	ash-free dry weight
ASTM	American Society for Testing and Materials
AVS/SEM	acid volatile sulfide/simultaneously extracted metal
BERA	baseline ecological risk assessment
COC	chain-of-custody
CPG	Cooperating Parties Group
DGPS	differential global positioning system
DMO	Dinnel Marine Resources
DO	dissolved oxygen
EIS	EnviroSystems, Inc.
GIS	geographic information system
LC50	concentration that is lethal to 50% of an exposed population
LPR	Lower Passaic River
LPRSA	Lower Passaic River Study Area
PMF	Protocol Modification Form
QAPP	quality assurance project plan
QA/QC	quality assurance/quality control
RM	river mile
RI/FS	remedial investigation/feasibility study
SOP	standard operating procedure
SQT	sediment quality triad
TPH	total petroleum hydrocarbons
USEPA	US Environmental Protection Agency

1 Introduction

The Lower Passaic River Study Area (LPRSA, also referred to as the Site) is the 17.4-mile-long stretch of the Passaic River between Dundee Dam and Newark Bay that is the subject of a remedial investigation/feasibility study (RI/FS). It is situated within the Lower Passaic River (LPR) watershed, which is highly urbanized and receives substantial inputs of industrial and municipal discharges. A baseline ecological risk assessment (BERA) will be conducted as part of the RI/FS, and will be used to evaluate the potential for hazardous substances present in environmental media to impact the health of ecological receptors within the LPRSA.

It is important to characterize background concentrations of contaminants in surface water, sediment, and tissue in order to identify the degree to which inputs of chemicals of concern are from sources upstream of the LPRSA. Likewise, it is important to obtain reference information to establish reference conditions for the Site.¹ The evaluation of background chemical concentrations and reference information will be used to assess Site-related risks in context with risks resulting from exposure to regional background (i.e., non-Site-related) sources.

For this reason, Appendix B to the *Revised Risk Analysis and Risk Characterization Plan for the Lower Passaic River Study Area* (Windward and AECOM [in prep]) recommends investigations above Dundee Dam to obtain freshwater reference information for comparison with data collected in the LPRSA.²

Reference sediment samples for sediment quality triad (SQT) analysis³ were collected in November 2012 from the area of the LPR immediately above Dundee Dam. Collection methods followed those presented in the *Lower Passaic River Restoration Project Quality Assurance Project Plan: Surface Sediment Chemical Analyses and Benthic Invertebrate Toxicity and Bioaccumulation Testing* (Windward 2009), hereafter referred to as the Benthic Quality Assurance Project Plan (QAPP), and the *Lower Passaic River Restoration Project Background and Reference Conditions Addendum to the Quality Assurance Project Plan: Surface Sediment Chemical Analyses and Benthic Invertebrate Toxicity and Bioaccumulation Testing*, hereafter referred to as the Benthic QAPP Addendum No. 5 (Windward 2012).

This data report presents the results from the toxicity testing component of the SQT reference sediment samples analysis. The results of the benthic invertebrate community survey and the analysis of chemistry samples will be presented in separate reports (Windward [in prep]).

¹ Appendix B to the *Revised Risk Analysis and Risk Characterization Plan for the Lower Passaic River Study Area* (Windward and AECOM [in prep]) provides a detailed, US Environmental Protection Agency (USEPA)-approved definition of background concentrations and reference information.

² Reference datasets are available for comparison to sample data collected in the estuarine portion of the LPRSA.

³ SQT samples were analyzed for chemistry, toxicity, and benthic invertebrate community indices.

1.1 PURPOSE AND SCOPE

The freshwater sediment toxicity investigation above Dundee Dam was conducted under the authority of the May 2007 Administrative Settlement Agreement and Order on Consent (Section IX.37.d.) (USEPA 2007) between the USEPA and the Cooperating Parties Group (CPG), a consortium of approximately 70 companies that agreed to complete the RI/FS of the 17.4-mile-long stretch of the Passaic River between Newark Bay and Dundee Dam.

The primary objectives of the 2012 sediment collection program were to collect freshwater background sediment chemistry data from one set of locations, and SQT data, which included the collection of additional sediment chemistry data, from another set of locations to establish an upstream reference area. These data will be used to provide context for Site-related risks with regard to the risks resulting from exposure to regional background (i.e., non-Site-related) sources. The sediment toxicity data collected upriver of Dundee Dam as part of the SQT reference dataset will be used to establish a reference condition for the LPRSA sediment toxicity data.

1.2 DOCUMENT OVERVIEW

This document describes the results of the freshwater sediment toxicity reference testing conducted in the 4.1-mile-long stretch of the Passaic River upstream of Dundee Dam. Section 2 presents the sampling design and methodology. Section 3 presents the toxicity test results, followed by a brief summary in Section 4. References are provided in Section 5. The text is supported by the following appendices:

- u Appendix A. Sampling Locations
- u Appendix B. Field Records
- u Appendix C. Data Summary Tables
- u Appendix D. Laboratory Reports
- u Appendix E. Validation Report
- u Appendix F. Chain-of-Custody Forms
- u Appendix G. Protocol Modification Forms

2 Sampling Design and Methodology

The sampling design and methodology for the 2012 freshwater reference sediment collection effort above Dundee Dam was presented in the Benthic QAPP Addendum No. 5 (Windward 2012). This section summarizes the elements of the sampling design and methodology that are relevant to the toxicity testing component of the program. Section 2.1 identifies the locations sampled during the 2012 SQT reference sample collection effort conducted above Dundee Dam. Details on the methods used to collect and process surface sediment (0- to 15-cm sediment horizon) samples for toxicity testing are presented in Section 2.2. Section 2.3 presents an overview of the methods used by the toxicity testing laboratory (including quality assurance/quality control [QA/QC] and validation) and the methods used to evaluate the test results.

2.1 SAMPLING LOCATIONS

As specified in the USEPA-approved Benthic QAPP Addendum No. 5 (Windward 2012), freshwater sediment toxicity reference samples were collected at 24 SQT locations between river mile (RM) 17.4 and RM 21.5 (Figure 2-1). The coordinates for each sampling location are provided in Appendix A, Table A-1. The total sampling area was subdivided into four segments: one 1.1-mile segment (the first segment above Dundee Dam from RM 17.4 to RM 18.5) and three 1-mile segments (RM 18.5 to RM 19.5, RM 19.5 to RM 20.5, and RM 20.5 to RM 21.5). Sampling locations were selected in each segment to provide as even a spatial allocation of samples as possible.

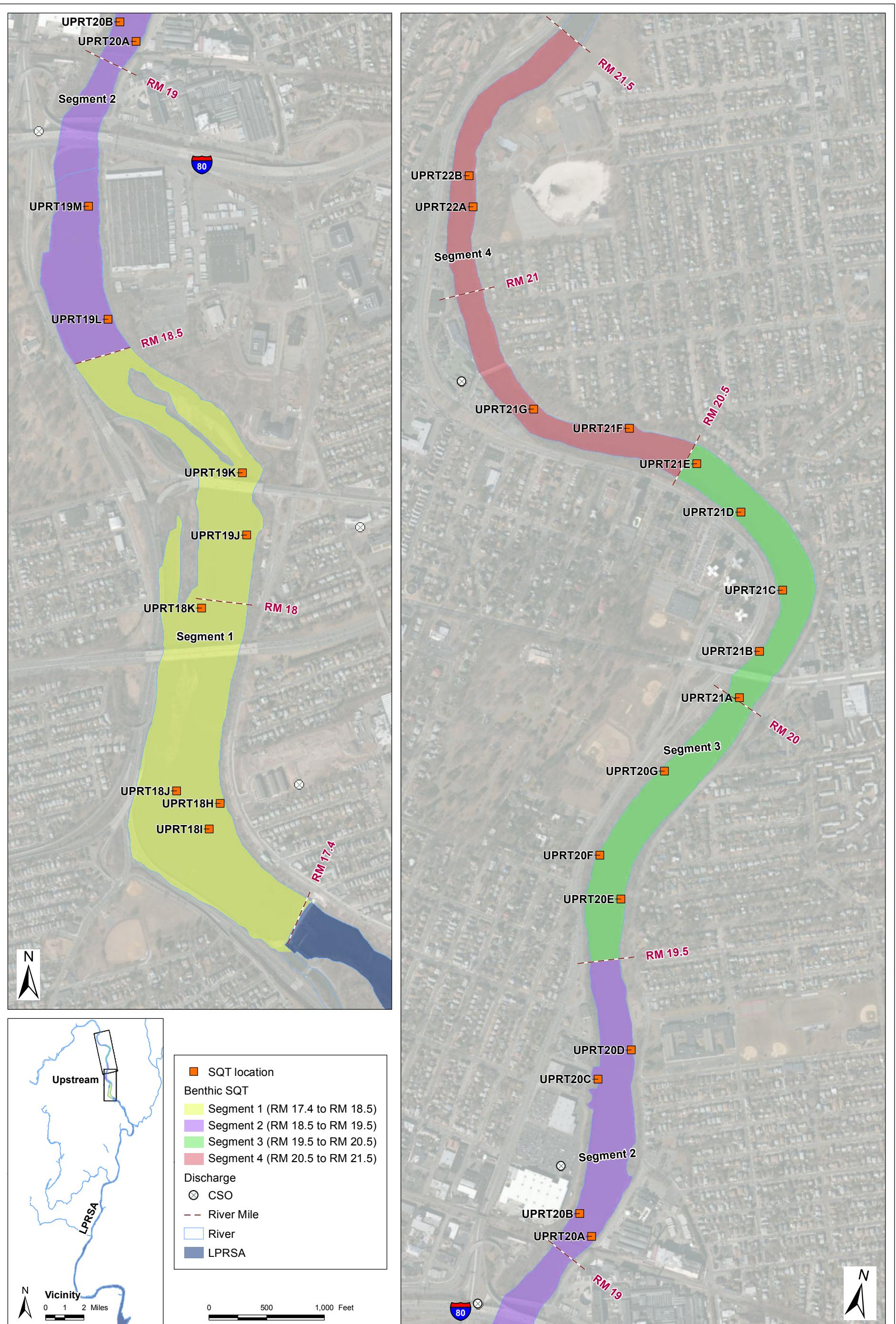


Figure 2.1. Locations where SQT reference samples were collected above Dundee Dam

For the SQT data collected within the LPRSA, approximately half of the SQT samples in shallow depth areas were targeted as fine-grained sediment, and approximately half were targeted as coarse-grained sediment.⁴ Therefore, to be consistent, 12 of the 24 selected SQT locations above Dundee Dam were targeted as fine-grained samples. Grain size data from previous sampling events above Dundee Dam (i.e., USEPA 2007 sampling (ddms 2011) and CPG 2008 low-resolution core sampling (AECOM [in prep])) facilitated the selection of SQT locations in the first segment (RM 17.4 to RM 18.5). No grain size data were available for the remaining three segments (RM 18.5 to RM 19.5, RM 19.5 to RM 20.5, and RM 20.5 to RM 21.5). Consequently, SQT sampling locations in these three segments were selected based on expected grain size using stream morphology and geographic information system (GIS) data. Expected depositional areas (e.g., areas inside river bends) or areas below bridge abutments were expected to have fine-grained sediment, and potential scouring areas (e.g., areas on the outside of river curves) were assumed to have coarse-grained sediment.

Prior to sediment sampling, a two-day reconnaissance survey was conducted on October 23 and 24, 2012, to verify sampling location accessibility and confirm the grain size at the targeted locations. Grain size confirmation in the field was determined using the wet sieving methods described in Attachment AA of the Benthic QAPP Addendum No. 5 (Windward 2012). Locations that could not be accessed by boat due to shallow water conditions or underwater obstructions (i.e., a utility line crossing the river obstructed access to locations immediately above Dundee Dam) were replaced with new locations; coordinates for the new locations were recorded using a boat-mounted differential global positioning system (DGPS). A protocol modification form (PMF) documenting the changes in locations is provided in Appendix G; see Section 2.2.3 for further discussion.

A USEPA Region 2 contractor authorized to perform oversight duties (i.e., CDM Smith) was present during both the reconnaissance survey and the sediment sampling efforts.

2.2 FIELD SAMPLING METHODS

This section presents the freshwater sediment toxicity reference sample collection, handling, and processing methods that were used during the 2012 freshwater reference sediment collection effort conducted above Dundee Dam. Sediment for chemistry and benthic invertebrate community analyses was collected at the same time as sediment for toxicity testing; the processing of those samples is described in separate reports (Windward [in prep]).

⁴ Fine-grained sediment is defined as having $\geq 60\%$ fines (fines are the sum of silt and clay fractions that pass through a No. 200 sieve [i.e., less than 75 μm in diameter]). Coarse-grained sediment is defined as having $< 60\%$ fines.

2.2.1 Sample collection

The procedures used to collect and process sediment toxicity samples followed the standard freshwater methods presented in the Benthic QAPP (Windward 2009) and the Benthic QAPP Addendum No. 5 (Windward 2012).

A boat-mounted DGPS system was used to locate the selected sampling locations. Prior to sampling, location coordinates were entered into the DGPS. The actual position was noted using the DGPS once the sampling equipment had been deployed and was positioned on the river bottom. Water depth at each sampling location was measured using a lead line marked in tenths of feet. Water quality parameters (i.e., temperature, dissolved oxygen [DO], pH, and conductivity) were measured at each location using a multi-probe meter that was calibrated daily using standard solutions. Sampling began at the downstream end of the sampling area and proceeded upstream.

Surface (i.e., 0- to 15-cm depth horizon) sediment samples for SQT analysis were collected using a stainless steel pneumatic power grab sampler with a 5-gal. capacity and a 0.2-m² surface area. The sampler was deployed from a pontoon boat equipped with a davit and winch. Sampling methods used during the field program are described below, and are also detailed in the standard operating procedure (SOP) included as Attachment D to the Benthic QAPP Addendum No. 5 (Windward 2012).

The number of surface grab samples collected at each location varied depending on the volume required, as well as the substrate and ease of sediment collection. In general, a minimum of five acceptable grab samples (one for chemistry and toxicity testing, and four for benthic invertebrate community analysis [one grab sample for each of the four benthic invertebrate community replicates])⁵ were required at each location. An additional grab sample was collected when a field duplicate or USEPA split sample was required, or when there was insufficient sediment available to meet volume requirements for chemistry and toxicity testing. The actual number of grab samples collected at each location is provided in Appendix B (Table B-2), which documents the data collected in the field. The coordinates provided in Appendix B reflect the position of the grab sample collected farthest downstream at each location.

The power grab sampler was deployed from the sampling vessel using a winch to control the speed. Once the power grab sampler had been pulled up and brought on board the boat, it was placed on a stand and evaluated to ensure that the grab was acceptable. A sediment grab was considered acceptable if the sampler had penetrated to a minimum depth of 16 cm (to ensure that sediment could be collected to a depth of 15 cm and had not been in contact with the sampler frame), but had not over penetrated such that the sediment had come into contact with the top of the sampler frame. The total depth of sediment in the grab sampler was determined using a ruler to measure

⁵The methodology and results from the collection of sediment for chemistry and benthic invertebrate community analyses are described in separate reports (Windward [in prep]).

the distance between the surface of the sediment in the grab sample and the top of the 22-cm-deep power grab sampler frame.

Once a grab sample was determined to be acceptable, the overlying water was siphoned and discarded. The subsample of sediment for toxicity testing and chemistry analysis⁶ was then transferred to a decontaminated stainless steel container using a decontaminated stainless steel spoon and immediately transferred to a nearby processing boat for homogenization.

Excess sediment from the samples or sediment from unacceptable grab samples was returned to the collection site. If a successful grab sample could not be collected (e.g., as a result of bottom debris or gravel), the sampling location was replaced with an alternative location that was still within the defined target sampling area approved by USEPA (i.e., within 10 m of the proposed sampling location as defined in the Benthic QAPP (Windward 2009)).

2.2.2 Sample handling and processing

Once on the processing boat, the sediment samples collected from each freshwater SQT station reference samples collected for chemistry analysis and toxicity testing were thoroughly homogenized together in order to make one uniform sample.⁷ Any large, non-sediment items, such as rocks, shells, wood chips, or large organisms (e.g., clams), were removed prior to homogenization; the surfaces of these items were scraped to remove any sediment and invertebrates, which were homogenized with the rest of the sample. Homogenized sediment was then distributed to the appropriate sample containers for the specific analyses.⁸ Sediment for toxicity testing was distributed into 1-gal. Teflon®-lined buckets, tightly sealed, labeled, and stored on wet ice in coolers.

A USEPA Region 2 contractor authorized to perform oversight duties (i.e., CDM Smith) was present during sample handling and processing.

Samples were transported to the CPG field facility at the end of the day, where they were stored at $4 \pm 1^\circ\text{C}$ in a walk-in refrigerator. At the end of the SQT reference sediment sampling effort, the samples for toxicity testing were picked up by a courier and delivered to EnviroSystems, Inc. (ESI) in Hampton, New Hampshire.

⁶ Note that sediment for the analysis of acid volatile sulfide/simultaneously extracted metals (AVS/SEMs), ammonia, sulfide, and total petroleum hydrocarbons (TPH) purgeables was subsampled directly from the grab sampler immediately after the sampler had been brought on board the sampling vessel. Samples for AVS/SEM, ammonia, sulfide, and TPH purgeables were subsampled as discrete, non-homogenized samples and immediately placed on ice.

⁷ Samples collected for benthic invertebrate community analysis were handled and processed separately from samples collected for chemistry analysis and toxicity testing; these methods are described in a separate report (Windward [in prep]).

⁸ See the sediment chemistry report (Windward [in prep]) for additional details on the processing of samples for chemistry analysis.

Chain-of-custody (COC) forms that document the transport of these samples from the CPG field facility to ESI are provided in Appendix F.

2.2.3 Field deviations

The collection and handling of the 2012 freshwater sediment toxicity reference samples in the field was completed as described in the Benthic QAPP Addendum No. 5 (Windward 2012), with the following exception:

- u During the reconnaissance survey, 12 SQT sampling locations were changed from the original target locations because the original locations were either inaccessible by boat, or the substrate was too coarse (e.g., rocky) to obtain acceptable sediment grab samples. PMF No. 1 to the Benthic QAPP Addendum No. 5 (Windward 2012) was prepared to provide the rationale for this USEPA-approved location change and the revised coordinates (Appendix G).

2.3 TOXICITY LABORATORY METHODS

This section provides a summary of the testing requirements and methods used to conduct toxicity testing for the 24 freshwater SQT reference samples collected in the LPR above Dundee Dam. Two toxicity tests were conducted: the 28-day *Hyalella azteca* survival and growth test, and the 10-day *Chironomus dilutus* survival and growth test.

Upon arrival at ESI, the samples were inspected, and the characteristics (e.g., coarseness, presence of indigenous organisms, debris) and condition of each sample were documented. Samples were given a unique tracking number and logged into the laboratory tracking system. Following protocols established for the USEPA-approved Benthic QAPP (Windward 2009), samples were not sieved prior to use. Samples were stored at $4 \pm 1^{\circ}\text{C}$ with nitrogen head space until use and when archived. The laboratory reports are provided in Appendix D.

2.3.1 *Hyalella azteca*

The 28-day *H. azteca* sediment toxicity test was conducted according to American Society for Testing and Materials (ASTM) Method E 1706-05 (ASTM 2010) and USEPA Method 100.4 (USEPA 2000).

H. azteca were exposed to test and negative control sediment for 28 days. The negative control sediment (used for quality control purposes) was a formulated sediment prepared according to USEPA (2000) methods. The organic material in the formulated sediment consisted of organic detritus from the ESI's chironomid culture combined with disintegrating unbleached paper pulp. The test was conducted with 8 replicates per treatment, each containing 100 mL of sediment and 225 mL of overlying water. The overlying water was natural, fresh surface water collected from the upper portion of the Taylor River watershed in Hampton Falls, New Hampshire, mixed with moderately hard reconstituted water (USEPA 2000) in a 50:50 ratio.

The test was initiated by adding 10 6-day-old amphipods to each replicate. The test was performed at $23 \pm 1^\circ\text{C}$ with a photoperiod of 16L:8D. A two-volume renewal of overlying water was conducted once each day, and 1.0 mL of a mixture of yeast, trout chow, and alfalfa suspension was added to each test chamber daily after water renewal. If the presence of residual, surplus food was observed, it was removed during daily water renewal.

Prior to renewing the overlying water each day, water quality parameters (i.e., DO, pH, specific conductance, and temperature) were measured in a surrogate chamber.⁹ Additional parameters (i.e., alkalinity, ammonia, and hardness) were measured in the overlying water on Days 0 (i.e., test initiation), 7, 14, 22, and 28 (i.e., test termination). The total organic carbon of the overlying water and the ammonia of the pore water were measured on Days 0 and 28. The recorded readings are provided in the laboratory data report (Appendix D).

Aeration was initiated in all test chambers on Day 1 after DO in one of the surrogate chambers had been recorded at a level below acceptable levels (i.e., 2.5 mg/L). Aeration was maintained in all test chambers throughout the remainder of the test period. See Section 3.2.2 for additional details.

On day 28, the test was terminated, and the number of surviving amphipods in each replicate was counted and recorded. Notations were made if there was evidence of reproduction (e.g., presence of small amphipods). The surviving amphipods from each replicate were dried at 104°C to constant weight and weighed to the nearest 0.01 mg. The total weight of the dried amphipods from each replicate was divided by the number of surviving amphipods to obtain an average dry weight per replicate. The test was deemed acceptable if mean survival in the negative control was $\geq 80\%$, and there was measurable growth in the negative control organisms (compared with weight at test initiation) (USEPA 2000). The methods of the *H. azteca* toxicity test are summarized in Table 2-1.

⁹ The surrogate chamber was treated exactly as a test chamber with the addition of organisms and food, but was not used to determine endpoint data.

Table 2-1. Summary of methods for the *Hyalella azteca* toxicity test

Parameter	Condition or Regimen
Test type	whole-sediment toxicity test with renewal of overlying water
Test duration	28 days
Endpoints measured	survival and growth
Test temperature	23°C ($\pm 1^{\circ}\text{C}$)
Illuminance	cool white fluorescent bulbs
Photoperiod	16:8 hour light:dark
Test chamber	400-mL glass beakers
Test sediment volume	100 mL
Overlying water volume	225 mL
Overlying water	natural surface water collected from the upper portion of the Taylor River watershed in Hampton Falls, New Hampshire, mixed with moderately hard reconstituted water (50:50 ratio)
Renewal of overlying water	two-volume water change conducted once daily using water distribution system
Control sediment	formulated sediment prepared according to USEPA methods (2000); source of organic material was chironomid culture organic detritus and disintegrating unbleached paper pulp
Test organism	<i>Hyalella azteca</i>
Test organism source	cultured by Aquatic Research Organisms, Hampton, New Hampshire
Test organism age	7 to 8 days old (hatch date of 12/1/2012)
Number of organisms/chamber	10
Number of replicate chambers/sample	8
Feeding	1.0 mL of yeast/trout chow/alfalfa suspension daily after water renewal
Aeration	none, unless DO in overlying water fell below 2.5 mg/L
Test protocol	USEPA 600/R-99/064, ASTM E1706-05
Test acceptability	mean control survival $\geq 80\%$ and measurable growth of control test organisms
Reference toxicant	cadmium

ASTM – American Society for Testing and Materials

ppth – parts per thousand

C – Celsius

USEPA – US Environmental Protection Agency

DO – dissolved oxygen

2.3.2 *Chironomus dilutus*

The 10-day *C. dilutus* sediment toxicity test was conducted according to ASTM Method E 1706-05 (ASTM 2010) and USEPA Method 100.4 (USEPA 2000), as summarized in Table 2-2.

Table 2-2. Summary of methods for the *Chironomus dilutus* toxicity test

Parameter	Condition or Regimen
Test type	whole-sediment toxicity test with renewal of overlying water
Test duration	10 days
Endpoints measured	survival and growth (AFDW and ash free dry biomass)
Test temperature	23°C ($\pm 1^{\circ}\text{C}$)
Illuminance	cool white fluorescent bulbs
Photoperiod	16:8 hour light:dark
Test chamber	400-mL glass beakers
Test sediment volume	100 mL
Overlying water volume	225 mL
Overlying water	natural surface water collected from the upper portion of the Taylor River watershed in Hampton Falls, New Hampshire
Renewal of overlying water	two-volume water change conducted once daily using water distribution system
Control sediment	formulated sediment prepared according to USEPA methods (2000); source of organic material was chironomid culture organic detritus and disintegrating unbleached paper pulp
Test organism	<i>Chironomus dilutus</i>
Test organism source	cultured by Aquatic BioSystems, Fort Collins, Colorado
Test organism age	8 to 10 days old; $\geq 50\%$ at least third-instar larvae (second-instar larvae on 12/5/2012)
Number of organisms/chamber	10
Number of replicate chambers/sample	8
Feeding	1.5 mL of 6-mg/L TetraMin flake fish food suspension
Aeration	none, unless DO in overlying water fell below 2.5 mg/L
Test protocol	USEPA 600/R-99/064, ASTM E1706-05
Test acceptability	mean control survival $\geq 70\%$ and mean weight/surviving organism of 0.48 mg AFDW
Reference toxicant	cadmium

AFDW – ash-free dry weight

DO – dissolved oxygen

ASTM – American Society for Testing and Materials

ppt – parts per thousand

C – Celsius

USEPA – US Environmental Protection Agency

C. dilutus were exposed to test and negative control sediment for 10 days. The negative control sediment (used for quality control purposes) was a formulated sediment prepared according to USEPA (2000) methods. The organic material in the formulated sediment consisted of organic detritus from the ESI's chironomid culture combined with disintegrating unbleached paper pulp. The overlying water was natural, fresh surface water collected from the upper portion of the Taylor River watershed in Hampton Falls, New Hampshire.

The test was conducted with 8 replicates per treatment, each containing 100 mL of sediment and 225 mL of overlying water. The test was initiated by adding 10 second- and third-instar larvae to each replicate. The test was performed at $23 \pm 1^{\circ}\text{C}$ with a photoperiod of 16L:8D. A two-volume renewal of overlying water was conducted once each day, and 1.0 mL of a 6-mg/L suspension of TetraMin flake fish food was added to each test chamber daily, after water renewal. If the presence of residual, surplus food was observed, it was removed during daily water renewal.

Prior to renewing the overlying water each day, water quality parameters (i.e., DO, pH, specific conductance, and temperature) were measured in a surrogate chamber. Additional parameters (i.e., alkalinity, ammonia, and hardness) were measured in the overlying water at test initiation and termination. The recorded readings are provided in the laboratory data report (Appendix D).

Aeration was initiated in all test chambers on Day 1 after DO in one of the surrogate chambers had been recorded at a level below acceptable levels (i.e., 2.5 mg/L). Aeration was maintained in all test chambers throughout the remainder of the test period. See Section 3.2.2 for additional details.

Test chambers were checked daily for pupation and emergence, and the number of emerged individuals was counted and recorded.

On day 10, the test was terminated, and the number of surviving organisms (i.e., larvae, pupae, and adult [emerged]) in each replicate was counted and recorded. The surviving larvae from each replicate (pupae and adult organisms were not included in the growth determination) were dried at 104°C to constant weight and weighed to the nearest 0.01 mg. The total weight of the dried larvae from each replicate was divided by the number of surviving larvae to obtain an average dry weight per replicate. The dried larvae were then ashed at 550°C for 2 hours. The ashed larvae were reweighed, and the tissue mass of the larvae was calculated as the difference between the weight of the dried larvae and the weight of the ashed larvae. Pupae and adult organisms were not included in the replicate to estimate ash-free dry weight (AFDW). The weight endpoint was based on the AFDW measurements. The test was deemed acceptable if mean survival in the negative control was $\geq 70\%$, and the mean weight of surviving negative control organisms was ≥ 48 mg AFDW (USEPA 2000).

2.3.3 QA/QC of toxicity tests

The sediment toxicity tests incorporated standard QA/QC procedures for evaluating the validity of the test results according to ASTM (ASTM 2010) and USEPA (2000) guidelines. Standard QA/QC procedures included the use of negative and positive controls and the periodic measurement of water quality during testing. The laboratory technicians performing the tests were responsible for ensuring that appropriate procedures were followed while conducting the tests. The laboratory performed the first data reduction by calculating average survival, dry weight (total weight divided by surviving number of organisms for each replicate), and dry biomass (total weight

divided by initial number of organisms for each replicate) for each test sediment sample and negative control sample. An internal review of the data was performed by the laboratory's QA/QC officer.

2.3.4 Validation methods

Paul Dinnel of Dinnel Marine Resources (DMR), an independent third party, conducted a validation of the toxicity data provided by ESI. By comparing the raw data with the electronic database and written test report, 100% of the data were validated. Any transcription errors, incorrect formulas, or other inconsistencies in the reports were corrected by ESI and verified by the independent reviewer before data were finalized. Further details on the data validation process are presented in Appendix E.

3 Results

This section presents the results of the toxicity tests conducted using the freshwater SQT reference samples collected above Dundee Dam. Section 3.1 provides results from the laboratory tests for *H. azteca* and *C. dilutus*, as well as the results of the negative control for both species. The results of the sediment toxicity test data validation are provided in Section 3.2. A summary of the data is provided in Appendix C. Laboratory reports are provided in Appendix D, and the validation report provided by DMR is presented in Appendix E.

3.1 SEDIMENT TOXICITY TEST RESULTS

Negative control performance was evaluated for both the *H. azteca* and *C. dilutus* tests, and was determined to be acceptable following USEPA and ASTM test acceptability criteria (ASTM 2010; USEPA 2000). The details for both *H. azteca* and *C. dilutus*, including the negative control results, are discussed in Sections 3.1.1 and 3.1.2, respectively.

3.1.1 *Hyalella azteca* toxicity test

The 28-day *H. azteca* sediment toxicity test using the 24 freshwater SQT reference samples was initiated on December 7, 2012, and included an evaluation of both survival and growth endpoints.

Mean negative control survival was 90%, which is acceptable based on the USEPA test acceptability criterion of mean control survival of at least 80% (USEPA 2000). The mean dry weight of 0.625 mg per surviving amphipod in the negative control is also considered acceptable based on the USEPA test acceptability criterion requiring measurable growth of control test organisms (USEPA 2000). The weight of a subset of organisms at test initiation was 0.015 mg/amphipod.

Results for the *H. azteca* test conducted using the 24 SQT reference sediment samples are presented in Table 3-1. Survival results are presented on Figure 3-1. Mean survival ranged from 0.0% at UPRT19J to 90.0% at UPRT18J. Mean weight ranged from 0.070 mg per surviving individual at UPRT20F to 0.531 mg per surviving individual at UPRT21G. Mean biomass, which was calculated by dividing total weight at the end of the test by the number of individuals at the start of the test, ranged from 0.0 mg at UPRT19J to 0.346 mg at UPRT19K.

Table 3-1. Summary of *Hyalella azteca* reference sediment toxicity test results

Location ID	Survival (%)		Weight ^a (mg)		Biomass ^b (mg)	
	Mean	St Dev	Mean	St Dev	Mean	St Dev
UPRT18H	85	13	0.311	0.073	0.264	0.0723
UPRT18I	73	26	0.253	0.0648	0.177	0.071

Table 3-1. Summary of *Hyalella azteca* reference sediment toxicity test results

Location ID	Survival (%)		Weight ^a (mg)		Biomass ^b (mg)	
	Mean	St Dev	Mean	St Dev	Mean	St Dev
UPRT18J	90	5.3	0.334	0.0624	0.302	0.0643
UPRT18K	75	15	0.376	0.0859	0.279	0.069
UPRT19J	0	0	na ^c	na ^c	0.0	0.0
UPRT19K	89	9.9	0.385	0.0616	0.346	0.0904
UPRT19L	65	21	0.341	0.134	0.232	0.131
UPRT19M	44	23	0.345	0.0315	0.148	0.0736
UPRT20A	60	30	0.252	0.0722	0.146	0.0809
UPRT20B	75	28	0.351	0.121	0.243	0.108
UPRT20C	76	21	0.394	0.115	0.306	0.135
UPRT20D	74	29	0.318	0.123	0.242	0.121
UPRT20E	66	14	0.337	0.114	0.226	0.0922
UPRT20F	1.3	3.5	0.070	na ^d	0.0009	0.0025
UPRT20G	68	15	0.291	0.127	0.199	0.105
UPRT21A	69	18	0.321	0.0882	0.218	0.0663
UPRT21B	19	19	0.201	0.124	0.0488	0.068
UPRT21C	78	7.1	0.353	0.0487	0.273	0.0335
UPRT21D	63	25	0.275	0.113	0.176	0.103
UPRT21E	58	22	0.269	0.101	0.159	0.0923
UPRT21F	73	17	0.343	0.0717	0.254	0.0909
UPRT21G	63	28	0.531	0.456	0.253	0.0969
UPRT22A	80	12	0.355	0.0732	0.29	0.0996
UPRT22B	59	20	0.458	0.128	0.265	0.101

^a Weight is the total weight for each replicate divided by the number of survivors.

^b Biomass is the total weight for each replicate divided by the initial number of organisms introduced into the test chamber.

^c Weight data are not available for UPRT19J because there were no survivors.

^d Standard deviation cannot be calculated for UPRT20F because only one replicate had survivors.

ID – identification

na – not applicable

St Dev – standard deviation

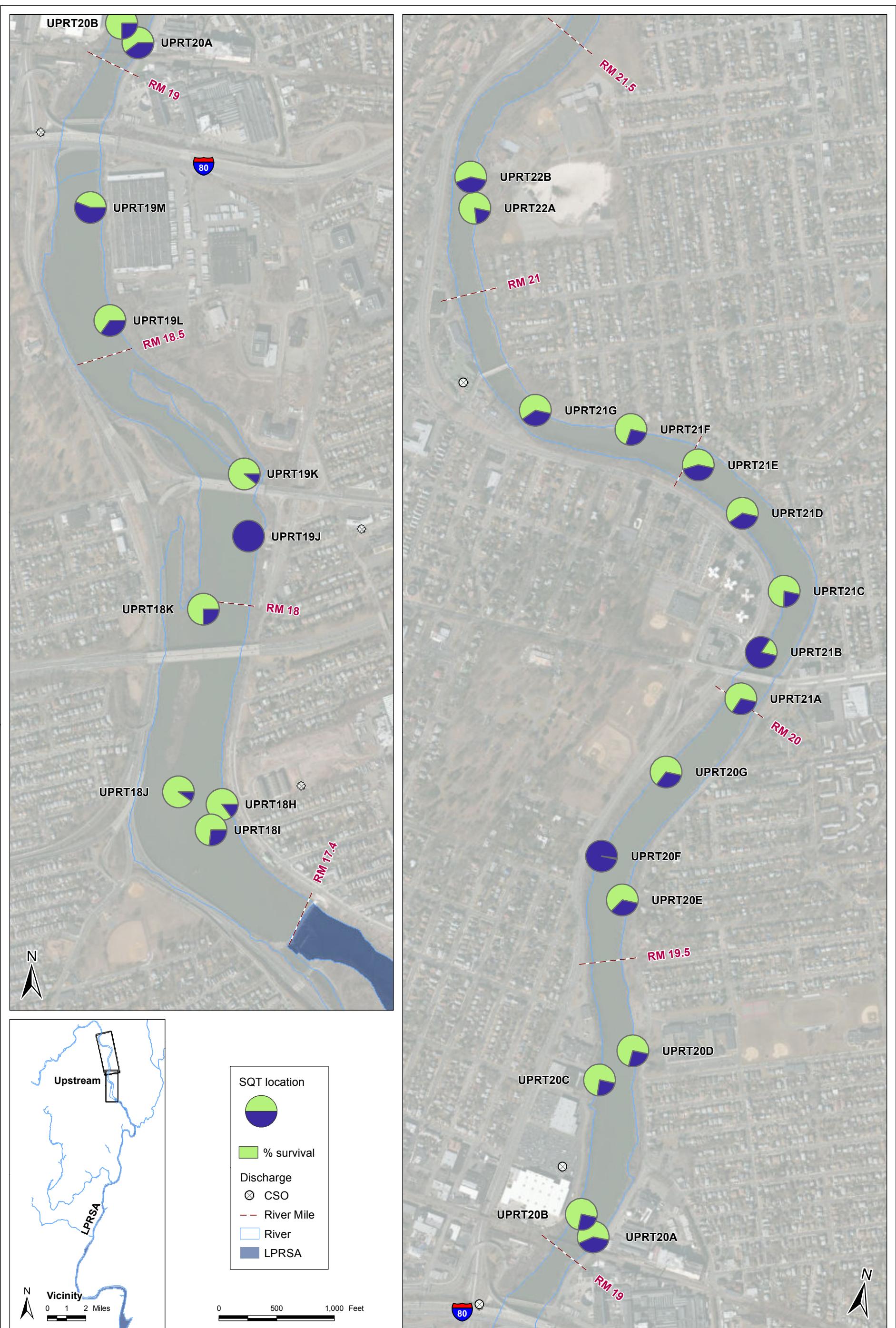


Figure 3-1. *Hyalella azteca* survival at SQT locations above Dundee Dam

3.1.2 *Chironomus dilutus* toxicity test

The 10-day *C. dilutus* sediment toxicity test using the 24 freshwater SQT reference samples was initiated on December 7, 2012, and included an evaluation of both survival and growth endpoints.

Mean negative control survival was 98%, which is acceptable based on the USEPA test acceptability criterion of mean control survival of at least 70% (USEPA 2000). The mean AFDW of 1.88 mg per surviving larvae in the negative control is also considered acceptable based on the USEPA test acceptability criterion of 0.48 mg per surviving larvae (USEPA 2000).

Results for the *C. dilutus* test conducted using the 24 SQT reference sediment samples are presented in Table 3-2. Survival results are presented on Figure 3-2. Mean survival ranged from 3.8% at UPRT19J to 94% at UPRT18H. Mean weight (measured as AFDW) ranged from 1.21 mg per surviving larvae at UPRT20F to 2.23 mg per surviving larvae at UPRT21B and UPRT21F. Mean biomass (measured as AFDW and calculated by dividing the total AFDW by the number of individuals at the start of the test less the number of organisms that pupated or emerged during the testing period) ranged from 0.0 mg at UPRT19J to 1.87 mg at UPRT21F.

Table 3-2. Summary of *Chironomus dilutus* reference sediment toxicity test results

Location ID	Survival (%) ^a		Weight (mg) ^b		Biomass (mg) ^c	
	Mean	St Dev	Mean	St Dev	Mean	St Dev
UPRT18H	94	5.2	1.55	0.392	1.41	0.314
UPRT18I	71	24	1.71	0.329	1.17	0.366
UPRT18J	89	14	1.54	0.234	1.36	0.417
UPRT18K	86	7.4	1.47	0.0796	1.25	0.156
UPRT19J	3.8	11	na ^d	na ^d	0	0
UPRT19K	74	24	1.69	0.172	1.17	0.328
UPRT19L	78	13	1.64	0.26	1.26	0.284
UPRT19M	80	15	1.69	0.356	1.34	0.153
UPRT20A	79	20	1.91	0.486	1.38	0.318
UPRT20B	80	16	1.95	0.469	1.48	0.437
UPRT20C	90	5.3	1.77	0.286	1.55	0.316
UPRT20D	79	23	1.58	0.427	1.16	0.311
UPRT20E	85	16	1.64	0.226	1.36	0.328
UPRT20F	54	17	1.21	0.423	0.651	0.365
UPRT20G	85	12	1.76	0.357	1.49	0.419
UPRT21A	89	8.3	1.70	0.473	1.44	0.343
UPRT21B	79	9.9	2.23	0.576	1.66	0.446

Table 3-2. Summary of *Chironomus dilutus* reference sediment toxicity test results

Location ID	Survival (%) ^a		Weight (mg) ^b		Biomass (mg) ^c	
	Mean	St Dev	Mean	St Dev	Mean	St Dev
UPRT21C	73	8.9	1.96	0.387	1.24	0.335
UPRT21D	71	17	2.07	0.329	1.31	0.199
UPRT21E	84	14	1.64	0.164	1.30	0.424
UPRT21F	88	8.9	2.23	0.365	1.87	0.366
UPRT21G	83	23	1.71	0.404	1.29	0.383
UPRT22A	70	21	1.97	0.56	1.16	0.228
UPRT22B	81	11	1.76	0.237	1.36	0.210

^a Percent survival is calculated using numbers of surviving larvae, pupae, and adults (emerged individuals).

^b Weight is calculated as the total AFDW for each replicate divided by the number of surviving larvae.

^c Biomass is calculated as the total AFDW for each replicate divided by the initial number of organisms introduced into the test chamber minus the number of organisms that either emerged or pupated during the test.

^d No weight or biomass data are available for UPRT19J because only one replicate had any survivors, and the weigh pan for that replicate was dropped before it was weighed.

AFDW – ash-free dry weight

na – not applicable

ID – identification

St Dev – standard deviation



Figure 3-2. *Chironomus dilutus* survival at SQT locations above Dundee Dam

3.2 QUALITY ASSURANCE/QUALITY CONTROL RESULTS

This section describes the results of the standard QA/QC procedures used to evaluate the quality of the sediment toxicity test data. Section 3.2.1 presents the QA/QC procedures conducted by the toxicity testing laboratory, and Section 3.2.2 presents a summary of the validation performed by DMR.

3.2.1 Laboratory QA/QC

The standard QA data provided by the laboratory included acceptable negative and positive control performance. As described in Section 3.1, the negative controls for both species met the test acceptability criteria (Tables 2-1 and 2-2) established for each test method (ASTM 2010; USEPA 2000).

The positive control consisted of a 96-hr reference toxicant test conducted with the same batch of test organisms as those used in the sediment toxicity tests, and using cadmium as the reference toxicant. Positive control results for both *H. azteca* and *C. dilutus* were acceptable. LC50 (concentration that is lethal to 50% of an exposed population) values for the positive controls conducted for both batches of test organisms fell within \pm 2 standard deviations of the laboratory's historical mean value, indicating that the test organisms responded as anticipated to the known toxicant. The positive control results are provided in the laboratory reports in Appendix D.

The 28-day *H. azteca* test was initiated using 6-day-old amphipods rather than the recommended 7-to-14-day-old amphipods (USEPA 2000) (see Section 3.2.2 for a discussion of this performance criterion). Hardness, alkalinity, and ammonia in the overlying water did not vary by more than 50% during the test.

The 10-day *C. dilutus* test was initiated using second- and third-instar larvae as recommended by USEPA (2000). In addition, overlying water quality parameters for hardness, alkalinity, and ammonia did not vary by more than 50% during the test, with the exception of ammonia in one sample (UPRT19J) in which total ammonia increased from 0.21 to 0.58 mg/L. This concentration of total ammonia is low, and the increase is not expected to stress the test organisms.

As discussed in Section 3.2.2, on Day 0 in both the *H. azteca* and *C. dilutus* tests, the DO concentration in the overlying water was below the USEPA-recommended lower limit of 2.5 mg/L (USEPA 2000). This DO measurement was collected prior to the addition of organisms to the chambers. Aeration was started in all test chambers and was maintained above the 2.5 mg/L for the duration of the test periods.

3.2.2 Data validation

DMR performed validation of 100% the ESI toxicity test data. This validation included an initial evaluation of all data for completeness and accuracy, followed by a final evaluation of the overall quality and usability of the data. Validation was conducted by reviewing all raw data forms and electronic files, and noting any errors, omissions, or

discrepancies. Electronic files were checked to ensure that calculation formulas were correct. Any transcription errors, incorrect calculations, or other inconsistencies were corrected by ESI before the data were finalized.

A validation report summarizing the results of the QA review of the reference sediment test data generated by ESI is provided in Appendix E. This report includes a description of the laboratory facility based on an on-site audit conducted by DMR in March 2009.

The validation determined that most of the data generated from the toxicity testing of the reference sediment collected above Dundee Dam are of good quality and usable as toxicity data for the upstream reference area. The final QA evaluation noted the following:

- COC procedures were properly implemented, and no deviations were noted in sample transport or sample temperature.
- All tests were initiated within the eight-week sample hold time.
- Negative control test acceptability criteria were met for both tests.
- Positive control results were acceptable; LC50 values were within \pm 2 standard deviations of the laboratory's control chart average LC50 values for each test.
- Data completeness was nearly 100% for the *H. azteca* test and 92.5% for the *C. dilutus* test.

The validation indicated a few protocol and water quality deviations from the laboratory SOPs attached to the Benthic QAPP (Windward 2012). The following is a list of the deviations:

- The *H. azteca* test was initiated with 6-day-old organisms based on the availability of test organisms the day the test was initiated. ESI's SOP states (on page 4) that tests will be initiated with 7- to 8-day-old organisms, following guidelines in USEPA (2000) protocol. The supplier did not have a sufficient quantity of organisms in the 7- to 8-day-old age range available during the week established for test initiation. Rather than initiate the tests on the weekend or use older organisms during the following week, the test was initiated on a Friday, when the organisms were 6 days old. The validator determined that the protocol deviation likely did not affect test results, because control performance met test acceptability criteria for both survival and growth endpoints. The data are, therefore, considered usable for the purposes of this study.
- An incorrect number of organisms were added to 4 test chambers during the *C. dilutus* test, based on the recovery of 11 organisms from each of those chambers at the end of the test period. The incorrect number of organisms was added to one replicate from three different samples (UPRT 20D, UPRT21F, and UPRT22A) and the control. However, because the statistical analyses conducted by the laboratory took into account the discrepancies in the initial counts when

they occurred, and because few replicates were affected, the validator has determined that interpretation of results should not be affected by the error. The data are, therefore, considered usable as toxicity data for the upstream reference area.

- u During the *C. dilutus* test, 15 weigh pans were accidentally dropped before weight data could be obtained. The loss of the weight data was distributed across 13 samples; in 11 samples (UPRT18I, UPRT18K, UPRT19J, UPRT19L, UPRT19M, UPRT20F, UPRT20G, UPRT21B, UPRT21C, UPRT21d, and UPRT21G), 1 of the 8 replicates was lost, and in 2 samples (UPRT18H, UPRT20C), 2 of the 8 replicates were lost. The validator determined that the loss of 1 to 2 replicates for the 13 samples resulted in a minor reduction in statistical power for the analysis of weight and biomass for those samples. The data are, therefore, considered usable as toxicity data for the upstream reference area.
- u Test chambers in the *C. dilutus* test were provided with 1.0 mL of 6 g/L Tetramin flake food daily, rather than 1.5 mL as specified in ESI's SOP. However, USEPA (2000) protocol recommends adding 1.5 mL of 4.0 g/L Tetramin daily to each test chamber, which is equal to 1.0 mL of 6 g/L Tetramin. Therefore, although the test procedure deviated from ESI's SOP, it did not deviate from USEPA protocol.
- u Water quality deviations occurred during both the *H. azteca* and *C. dilutus* tests: the recorded temperature in the test chambers fell below the mean specified range of $23 \pm 1^{\circ}\text{C}$, and exceeded the maximum fluctuation range of $23 \pm 3^{\circ}\text{C}$ at various times during the testing period, in particular during the first three days of testing. The validator determined that the low temperatures during the early part of the tests may have slightly reduced amphipod and chironomid larval growth, but that temperatures were within tolerance ranges (0 to 33°C for *H. azteca* and 0 to 35°C for *C. dilutus*) and control growth was acceptable in both tests. Final results were not likely compromised by the low temperatures. The data are, therefore, considered usable as toxicity data for the upstream reference area.
- u On Day 0, prior to introduction of organisms in both the *H. azteca* and *C. dilutus* tests, the DO concentration for one sample (UPRT20B) was below the lower limit of 2.5 mg/L specified in the protocol (USEPA 2000). Aeration was immediately initiated in all test chambers, and was maintained throughout the remainder of the test period.
- u On Day 0, ammonia concentrations in sediment porewater and overlying water for sample UPRT21B were elevated compared to concentrations in the rest of the samples. The validator noted that the ammonia concentrations in UPRT21B were below the four-day LC50 concentration for both the *H. azteca* and *C. dilutus* tests, but also noted the possibility that organisms exposed to this sample may have been stressed by ammonia. However, unionized ammonia levels were below the

0.4-mg/L threshold that would trigger purging ammonia prior to the introduction of organisms.

4 Summary

The objectives of the 2012 reference sediment collection program were met with regard to the collection of SQT samples and the toxicity testing of sediments collected above Dundee Dam. These data will be used to establish a reference envelope to assist in understanding LPRSA sediment toxicity test results that will be presented in the BERA.

5 References

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APPENDIX A. SAMPLING LOCATIONS

Table A-1. 2012 freshwater sediment reference sampling locations

Sampling Location	Coordinates		Approximate RM	Collection Date/Time
	Final Easting ^{a, b}	Final Northing ^{a, b}		
UPRT18H	594662	747963	17.6	11/12/12 12:17
UPRT18I	594567	747742	17.6	11/12/12 10:13
UPRT18J	594284	748072	17.6	11/12/12 13:21
UPRT18K	594500	749655	17.9	11/12/12 14:37
UPRT19J	594891	750287	18.1	11/13/12 08:20
UPRT19K	594853	750827	18.2	11/13/12 09:46
UPRT19L	593691	752156	18.5	11/13/12 10:55
UPRT19M	593521	753134	18.7	11/13/12 11:59
UPRT20A	593933	754562	19.0	11/13/12 13:30
UPRT20B	593792	754732	19.0	11/13/12 19:41
UPRT20C	593704	755904	19.3	11/14/12 08:15
UPRT20D	593934	756211	19.3	11/14/12 09:14
UPRT20E	593573	757471	19.6	11/14/12 11:12
UPRT20F	593318	757805	19.6	11/14/12 11:49
UPRT20G	593713	758634	19.8	11/14/12 12:52
UPRT21A	594215	759390	20.0	11/14/12 13:52
UPRT21B	594304	759819	20.0	11/15/12 08:19
UPRT21C	594388	760379	20.2	11/15/12 09:17
UPRT21D	593893	760965	20.3	11/15/12 10:08
UPRT21E	593432	761295	20.4	11/15/12 10:52
UPRT21F	592798	761474	20.6	11/15/12 11:29
UPRT21G	591953	761465	20.7	11/15/12 12:25
UPRT22A	591076	763069	21.1	11/15/12 08:06
UPRT22B	590985	763326	21.1	11/15/12 09:09

^a Final easting and northing refer to DGPS coordinates that have been differentially corrected to obtain sub-foot accuracy. Coordinates were collected using vessel-mounted DGPS equipment. Coordinates provided were from the first successful grab sample for a given location.

^b New Jersey State Plane (US survey feet)

DGPS – differential global positioning system

RM – river mile

APPENDIX B. FIELD RECORDS

Table B-1. SQT sediment field data

Sampling Location	Collection Date/Time	Weather	Sediment Type	Sediment Color	Sediment Odor	Comments
UPRT18H	11/12/12 12:17	sun, 60s°F	fine/medium/coarse sand	brown	none	plant/wood debris
UPRT18I	11/12/12 10:13	fog, sun, 50s/60s°F	fine/medium/coarse sand, silt	brown	none	leaf/plant/wood debris, shell fragments, plastic
UPRT18J	11/12/12 13:21	sun, 60s°F	fine/medium sand, silt	brown	none	plant debris, shell fragments, some organic matter, plastic; field duplicate UPRT18J-FD
UPRT18K	11/12/12 14:37	sun, 60s°F	gravel, fine/medium, coarse sand, silt	brown	none	leaf/plant/wood debris, shell fragments
UPRT19J	11/13/12 08:20	overcast, rain, 50s°F	fine/medium sand, silt	gray/black	slight, H ₂ S/ petroleum	mostly fine sand and silt; organic debris, sheen; USEPA split sample location
UPRT19K	11/13/12 09:46	rain, 40s°F	fine/medium/coarse sand, trace silt	brown	none	woody debris, leaf litter, shell fragments
UPRT19L	11/13/12 10:55	rain, 40s°F	gravel, fine/medium/coarse sand	brown	none	plant/wood debris, shell fragments, trash
UPRT19M	11/13/12 11:59	rain, 40s°F	gravel, fine/medium/coarse sand, trace silt	brown	none	wood debris, shell fragments, glass; USEPA split sample location
UPRT20A	11/13/12 13:30	rain, 40s°F	gravel, fine/medium/coarse sand, silt	brown, brown surface	none	shell fragments, organic matter, clams, trash debris USEPA split sample location
UPRT20B	11/13/12 14:41	rain, 40s°F	fine/medium sand, silt	brown	slight, H ₂ S	leaf/plant/wood debris, leaves, clams, shell fragments
UPRT20C	11/14/12 08:15	sun, 40s°F	silt	brown	slight, petroleum	leaf litter, sheen
UPRT20D	11/14/12 09:14	sun, 40s°F	fine/trace medium sand, silt	brown	slight, petroleum	leaf/wood debris, sheen
UPRT20E	11/14/12 11:12	sun, 40s°F	gravel, medium/coarse sand	brown	none	wood debris, shell fragments, amphipods
UPRT20F	11/14/12 11:49	sun, 40s°F	fine sand, silt	brown/black	slight, petroleum	leaf/plant debris, organic matter, clams, sheen

Table B-1. SQT sediment field data

Sampling Location	Collection Date/Time	Weather	Sediment Type	Sediment Color	Sediment Odor	Comments
UPRT20G	11/14/12 12:52	sun, 40s°F	fine/medium/coarse sand	brown	none	leaf litter, shell fragments
UPRT21A	11/14/12 13:52	sun, 40s°F	trace gravel, medium/coarse sand	brown	none	leaf debris, shell fragments, glass, trash, clams
UPRT21B	11/15/12 08:19	sun, 40s°F	fine/medium/trace coarse sand, silt	brown/gray	slight, petroleum	leaf litter, plastic
UPRT21C	11/15/12 09:17	sun, 40s°F	gravel, fine/medium/coarse sand	brown	slight, petroleum	plant/wood debris, leaf litter, shell fragments, glass
UPRT21D	11/15/12 10:08	sun, 40s°F	trace cobble, gravel, medium/coarse sand	brown	slight, H ₂ S	shell hash, glass
UPRT21E	11/15/12 10:52	sun, 40s°F	fine/medium/coarse sand, trace silt	brown	none	leaf debris, shell fragments
UPRT21F	11/15/12 11:29	sun, 40s°F	fine/medium sand, trace silt	brown	slight H ₂ S	leaf/wood debris, plastic, trash
UPRT21G	11/15/12 12:25	sun, 40s°F	medium/coarse sand	brown	none	leaf litter, wood debris, shell fragments
UPRT22A	11/16/12 08:06	overcast, 40s°F	gravel, fine/medium/coarse sand	brown	none	wood debris, shell fragments, clams
UPRT22B	11/16/12 09:09	overcast, 40s°F	gravel, fine/medium/coarse sand	brown	none	wood debris, shell fragments, glass, clams

Note: All samples were collected using a grab sampler and obtained from the 0- to 15-cm depth of the grab.

SQT – sediment quality triad

USEPA – US Environmental Protection Agency

Table B-2. SQT sediment collection data

Sampling Location	Sediment Grab Attempt ^a	Attempt Date/Time	Acceptable Grab? ^b	Penetration Depth (cm) ^c	Water Depth (m) ^d	Benthic Invertebrate Community Subsample ID	Comments
UPRT18H	UPRT18H-A1	11/12/12 12:12	no	0	1	na	stick in jaws
	UPRT18H-A2	11/12/12 12:17	yes	24	1	na	RPD < 0.5 cm; plant/wood debris
	UPRT18H-A3	11/12/12 12:29	yes	19	1	UPRT18H-BC01	RPD < 0.5 cm; plant/wood debris
	UPRT18H-A4	11/12/12 12:37	yes	22	1	UPRT18H-BC02	RPD < 0.5 cm; plant/wood debris
	UPRT18H-A5	11/12/12 12:50	yes	16	1	UPRT18H-BC03	RPD < 0.5 cm; plant debris, plastic
	UPRT18H-A6	11/12/12 12:56	yes	25	1	UPRT18H-BC04	RPD < 0.5 cm; plant/wood debris
UPRT18I	UPRT18I-A1	11/12/12 10:13	yes	25	1.7	na	RPD < 0.5 cm; leaf/plant/wood debris, shell fragments
	UPRT18I-A2	11/12/12 10:35	yes	21	1.7	UPRT18I-BC01	RPD < 0.5 cm; leaf/plant/wood debris, shell fragments, plastic
	UPRT18I-A3	11/12/12 10:46	yes	18	1.7	UPRT18I-BC02	RPD < 0.5 cm; leaf/plant/wood debris, shell fragments, plastic
	UPRT18I-A4	11/12/12 10:56	yes	17	1.7	UPRT18I-BC03	RPD < 0.5 cm; leaf/plant/wood debris, shell fragments, plastic
	UPRT18I-A5	11/12/12 11:03	no	7	1.7	na	insufficient penetration
	UPRT18I-A6	11/12/12 11:06	no	10	1.7	na	insufficient penetration
	UPRT18I-A7	11/12/12 11:09	no	0	1.7	na	insufficient penetration
	UPRT18I-A8	11/12/12 11:12	no	0	1.7	na	insufficient penetration
	UPRT18I-A9	11/12/12 11:14	no	0	1.7	na	insufficient penetration
	UPRT18I-A10	11/12/12 11:16	no	0	1.7	na	insufficient penetration
	UPRT18I-A11	11/12/12 11:18	no	0	1.7	na	insufficient penetration
	UPRT18I-A12	11/12/12 11:21	no	0	1.7	na	insufficient penetration
	UPRT18I-A13	11/12/12 11:25	no	0	1.7	na	insufficient penetration
	UPRT18I-A14	11/12/12 11:29	no	0	1.7	na	insufficient penetration
	UPRT18I-A15	11/12/12 11:33	no	0	1.7	na	insufficient penetration
	UPRT18I-A16	11/12/12 11:35	no	0	1.7	na	insufficient penetration
	UPRT18I-A17	11/12/12 11:49	yes	28	1.7	UPRT18I-BC04	RPD < 0.5 cm; leaf/plant/wood debris, shell fragments, plastic

Table B-2. SQT sediment collection data

Sampling Location	Sediment Grab Attempt ^a	Attempt Date/Time	Acceptable Grab? ^b	Penetration Depth (cm) ^c	Water Depth (m) ^d	Benthic Invertebrate Community Subsample ID	Comments
UPRT18J	UPRT18J-A1	11/12/12 13:21	yes	28	0.3	na	RPD < 0.5 cm; shell fragments, plant/plastic debris, organic matter; field duplicate UPRT18J-FD
	UPRT18J-A2	11/12/12 13:43	yes	30	0.3	UPRT18J-BC01	RPD < 0.5 cm; plant/organic matter, plastic
	UPRT18J-A3	11/12/12 13:52	yes	32	0.3	UPRT18J-BC02	RPD < 0.5 cm; plant/organic matter, wood, plastic
	UPRT18J-A4	11/12/12 14:02	yes	25	0.3	UPRT18J-BC03	RPD < 0.5 cm; plant matter, organic debris, wood, plastic
	UPRT18J-A5	11/12/12 14:12	yes	19	0.3	UPRT18J-BC04	RPD < 0.5 cm
UPRT18K	UPRT18K-A1	11/12/12 14:37	yes	24	0.24	na	RPD < 0.5 cm; shell fragments, leaf/plant/wood debris
	UPRT18K-A2	11/12/12 14:47	yes	22	0.24	UPRT18K-BC01	RPD < 0.5 cm; leaf/plant debris, shell fragments
	UPRT18K-A3	11/12/12 14:53	yes	26	0.24	UPRT18K-BC02	RPD = 0 cm; trace plant debris, shell fragments
	UPRT18K-A4	11/12/12 15:00	yes	25	0.24	UPRT18K-BC03	RPD = 0 cm; shell fragments, brick fragment
	UPRT18K-A5	11/12/12 15:06	yes	27	0.24	UPRT18K-BC04	RPD = 0 cm; shell fragment, clams
UPRT19J	UPRT19J-A1	11/13/12 08:20	yes	30	1.16	na	RPD < 0.5 cm; sheen, plant/organic debris; USEPA split sample location
	UPRT19J-A2	11/13/12 08:40	no	0	1.16	na	insufficient penetration
	UPRT19J-A3	11/13/12 08:46	yes	23	1.16	na	RPD < 0.5 cm; sheen, plant debris; USEPA split sample location
	UPRT19J-A4	11/13/12 08:58	yes	26	1.16	UPRT19J-BC01	RPD < 0.5 cm; sheen, plant/organic debris
	UPRT19J-A5	11/13/12 09:09	yes	32	1.16	UPRT19J-BC02	RPD < 0.5 cm; sheen, plant/organic debris
	UPRT19J-A6	11/13/12 09:19	yes	32	1.16	UPRT19J-BC03	RPD < 0.5 cm; sheen, organic debris
	UPRT19J-A7	11/13/12 09:27	yes	32	1.16	UPRT19J-BC04	RPD < 0.5 cm; sheen, worms, organic matter

Table B-2. SQT sediment collection data

Sampling Location	Sediment Grab Attempt ^a	Attempt Date/Time	Acceptable Grab? ^b	Penetration Depth (cm) ^c	Water Depth (m) ^d	Benthic Invertebrate Community Subsample ID	Comments
UPRT19K	UPRT19K-A1	11/13/12 09:45	no	12	0.3	na	insufficient penetration
	UPRT19K-A2	11/13/12 09:46	yes	21	0.3	na	RPD = 0 cm; wood/plant debris, shell fragments, plastic trash
	UPRT19K-A3	11/13/12 09:57	no	12	0.3	na	insufficient penetration
	UPRT19K-A4	11/13/12 09:59	yes	18	0.3	UPRT19K-BC01	RPD = 0 cm; shell fragments, wood/plant debris, trash
	UPRT19K-A5	11/13/12 10:11	yes	22	0.3	UPRT19K-BC02	RPD = 0 cm; wood debris, trash, shell fragments
	UPRT19K-A6	11/13/12 10:19	yes	20	0.3	UPRT19K-BC03	RPD = 0 cm; wood debris, trash, shell fragments
	UPRT19K-A7	11/13/12 10:28	yes	16	0.3	UPRT19K-BC04	RPD = 0 cm; wood debris, trash, shell fragments
UPRT19L	UPRT19L-A1	11/13/12 10:55	yes	24	0.75	na	RPD < 0.5 cm; plant/wood debris, shell fragments, clams, plastic
	UPRT19L-A2	11/13/12 11:07	yes	26	0.75	UPRT19L-BC01	RPD = 0 cm; shell fragments, wood debris, plastic trash
	UPRT19L-A3	11/13/12 11:16	yes	24	0.75	UPRT19L-BC02	RPD = 0 cm; wood debris, shell fragments, plastic, glass
	UPRT19L-A4	11/13/12 11:22	yes	30	0.75	UPRT19L-BC03	RPD = 0 cm; wood debris, shell fragments, trash
	UPRT19L-A5	11/13/12 11:24	no	11	0.75	na	insufficient penetration
	UPRT19L-A6	11/13/12 11:26	yes	26	0.75	UPRT19L-BC04	RPD = 0 cm; shell fragments, trash, wood/plant debris
UPRT19M	UPRT19M-A1	11/13/12 11:59	yes	25	1.68	na	RPD < 0.5 cm; shell fragments; USEPA split sample location
	UPRT19M-A2	11/13/12 12:19	yes	32	1.68	na	RPD = 0 cm; shell fragments, glass; USEPA split sample location
	UPRT19M-A3	11/13/12 12:24	yes	26	1.68	UPRT19M-BC01	RPD = 0 cm; shell fragments, plastic, wood debris
	UPRT19M-A4	11/13/12 12:31	yes	23	1.68	UPRT19M-BC02	RPD = 0 cm; shell fragments, wood debris
	UPRT19M-A5	11/13/12 12:38	yes	27	1.68	UPRT19M-BC03	RPD = 0 cm; shell fragments, wood debris
	UPRT19M-A6	11/13/12 12:44	yes	27	1.68	UPRT19M-BC04	RPD = 0 cm; shell fragments

Table B-2. SQT sediment collection data

Sampling Location	Sediment Grab Attempt ^a	Attempt Date/Time	Acceptable Grab? ^b	Penetration Depth (cm) ^c	Water Depth (m) ^d	Benthic Invertebrate Community Subsample ID	Comments
UPRT20A	UPRT20A-A1	11/13/12 13:30	yes	21	3	na	RPD < 0.5 cm; shell fragments, organic matter, clams, trash USEPA split sample
	UPRT20A-A2	11/13/12 13:43	yes	17	3	na	RPD < 0.5 cm; clams, shell fragments; USEPA split sample location
	UPRT20A-A3	11/13/12 13:47	no	0	3	na	insufficient penetration
	UPRT20A-A4	11/13/12 13:48	no	0	3	na	insufficient penetration
	UPRT20A-A5	11/13/12 13:49	yes	16	3	UPRT20A-BC01	RPD < 0.5 cm; shell fragments, clams, plant debris
	UPRT20A-A6	11/13/12 14:06	yes	20	3	UPRT20A-BC02	RPD < 0.5 cm; shell fragments, clams, wood debris
	UPRT20A-A7	11/13/12 14:13	yes	22	3	UPRT20A-BC03	RPD < 0.5 cm; clams, shell fragments
	UPRT20A-A8	11/13/12 14:20	yes	16	3	UPRT20A-BC04	RPD < 0.5 cm; clams, shell fragments
UPRT20B	UPRT20B-A1	11/13/12 14:41	yes	24	0.78	na	RPD < 0.5 cm; leaf debris, wood/plant debris
	UPRT20B-A2	11/13/12 14:56	yes	31	0.78	UPRT20B-BC01	RPD < 0.5 cm; leaf debris
	UPRT20B-A3	11/13/12 15:03	yes	28	0.78	UPRT20B-BC02	RPD < 0.5 cm; wood/leaf litter, clams, shell fragments
	UPRT20B-A4	11/13/12 15:11	yes	20	0.78	UPRT20B-BC03	RPD < 0.5 cm; wood, leaf litter, clams, plants, shell fragments
	UPRT20B-A5	11/13/12 15:17	yes	27	0.78	UPRT20B-BC04	RPD < 0.5 cm; shell fragments, plant/wood debris
UPRT20C	UPRT20C-A1	11/14/12 08:15	yes	32	2.6	na	RPD = 0.5 cm; leaf litter, trash, sheen
	UPRT20C-A2	11/14/12 08:20	no		2.6	na	over penetration
	UPRT20C-A3	11/14/12 08:32	yes	28	2.6	UPRT20C-BC01	RPD = 0.5 cm; leaf litter, sheen
	UPRT20C-A4	11/14/12 08:41	yes	33	2.6	UPRT20C-BC02	RPD = 0.5 cm; leaf litter, sheen
	UPRT20C-A5	11/14/12 08:47	yes	33	2.6	UPRT20C-BC03	RPD = 0.5 cm; leaf litter, sheen
	UPRT20C-A6	11/14/12 08:53	yes	33	2.6	UPRT20C-BC04	RPD = 0.5 cm; leaf litter, sheen

Table B-2. SQT sediment collection data

Sampling Location	Sediment Grab Attempt ^a	Attempt Date/Time	Acceptable Grab? ^b	Penetration Depth (cm) ^c	Water Depth (m) ^d	Benthic Invertebrate Community Subsample ID	Comments
UPRT20D	UPRT20D-A1	11/14/12 09:14	yes	32	1.57	na	RPD = 0.5 cm; leaf/wood debris, trash, sheen
	UPRT20D-A2	11/14/12 10:13	yes	32	1.57	UPRT20D-BC01	RP = 0.5 cm; leaf/wood debris, sheen
	UPRT20D-A3	11/14/12 10:18	no		1.57	na	over penetration
	UPRT20D-A4	11/14/12 10:22	yes	29	1.57	UPRT20D-BC02	RPD < 0.5 cm; leaf litter, wood debris, sheen
	UPRT20D-A5	11/14/12 10:36	yes	33	1.57	UPRT20D-BC03	RPD < 0.5 cm; leaf litter, wood debris, sheen, clams
	UPRT20D-A6	11/14/12 10:41	yes	32	1.57	UPRT20D-BC04	RPD < 0.5 cm; leaf litter, wood, sheen
UPRT20E	UPRT20E-A1	11/14/12 11:05	no	11	0.68	na	insufficient penetration
	UPRT20E-A2	11/14/12 11:06	no	12	0.68	na	insufficient penetration
	UPRT20E-A3	11/14/12 11:07	no	14	0.68	na	insufficient penetration
	UPRT20E-A4	11/14/12 11:12	yes	24	0.68	na	RPD = 0 cm; shell fragments, wood debris
	UPRT20E-A5	11/14/12 11:23	yes	25	0.68	UPRT20E-BC01	RPD = 0 cm; shell fragments, plants, wood debris
	UPRT20E-A6	11/14/12 11:27	yes	28	0.68	UPRT20E-BC02	RPD = 0 cm; shell fragments, leaf litter, amphipods
	UPRT20E-A7	11/14/12 11:34	yes	23	0.68	UPRT20E-BC03	RPD = 0 cm; shell fragments, clams, wood debris, glass, plants
	UPRT20E-A8	11/14/12 11:39	yes	27	0.68	UPRT20E-BC04	RPD = 0 cm; shell fragments, glass, wood/plants, amphipods

Table B-2. SQT sediment collection data

Sampling Location	Sediment Grab Attempt ^a	Attempt Date/Time	Acceptable Grab? ^b	Penetration Depth (cm) ^c	Water Depth (m) ^d	Benthic Invertebrate Community Subsample ID	Comments
UPRT20F	UPRT20F-A1	11/14/12 11:49	yes	23	1.72	na	RPD < 0.5 cm; sheen, leaf litter, plants, organic debris, clams
	UPRT20F-A2	11/14/12 12:06	yes	22	1.72	UPRT20F-BC01	RPD < 0.5 cm; sheen, leaf litter, organic debris, clams
	UPRT20F-A3	11/14/12 12:15	yes	28	1.72	UPRT20F-BC02	RPD < 0.5 cm; sheen, plant debris, leaf litter, amphipods
	UPRT20F-A4	11/14/12 12:24	yes	27	1.72	UPRT20F-BC03	RPD < 0.5 cm; shell fragments, leaf litter, plant debris, sheen
	UPRT20F-A5	11/14/12 12:34	yes	28	1.72	UPRT20F-BC04	RPD < 0.5 cm; sheen, leaf litter, plant matter, shell fragments, clams
UPRT20G	UPRT20G-A1	11/14/12 12:52	yes	22	0.9		RPD < 0.5 cm; leaf litter, shell fragments
	UPRT20G-A2	11/14/12 13:02	yes	23	0.9	UPRT20G-BC01	RPD = 0 cm; leaf litter, shell fragments
	UPRT20G-A3	11/14/12 13:08	yes	28	0.9	UPRT20G-BC02	RPD = 0 cm; leaf litter, shell fragments
	UPRT20G-A4	11/14/12 13:14	yes	26	0.9	UPRT20G-BC03	RPD = 0 cm; shell fragments
	UPRT20G-A5	11/14/12 13:20	yes	25	0.9	UPRT20G-BC04	RPD = 0 cm; shell fragments
UPRT21A	UPRT21A-A1	11/14/12 13:52	yes	20	1.95	na	RPD = 0 cm; lots of shell fragments, glass, leaf debris, plastic
	UPRT21A-A2	11/14/12 14:00	yes	27	1.95	UPRT21A-BC01	RPD = 0 cm; lots of shell fragments, clams, trace plant debris
	UPRT21A-A3	11/14/12 14:07	yes	24	1.95	UPRT21A-BC02	RPD = 0 cm; shell fragments, clams, leaf litter
	UPRT21A-A4	11/14/12 14:14	yes	22	1.95	UPRT21A-BC03	RPD = 0 cm; shell fragments, clams, leaf/wood debris
	UPRT21A-A5	11/14/12 14:19	yes	20	1.95	UPRT21A-BC04	RPD = 0 cm; shell fragments, clams, wood debris

Table B-2. SQT sediment collection data

Sampling Location	Sediment Grab Attempt ^a	Attempt Date/Time	Acceptable Grab? ^b	Penetration Depth (cm) ^c	Water Depth (m) ^d	Benthic Invertebrate Community Subsample ID	Comments
UPRT21B	UPRT21B-A1	11/15/12 08:19	yes	32	0.71	na	RPD < 0.5 cm; lots of leaf litter, plastic
	UPRT21B-A2	11/15/12 08:34	yes	33	0.71	UPRT21B-BC01	RPD < 0.5 cm; leaf litter
	UPRT21B-A3	11/15/12 08:42	yes	32	0.71	UPRT21B-BC02	RPD < 0.5 cm; leaf litter
	UPRT21B-A4	11/15/12 08:50	yes	33	0.71	UPRT21B-BC03	RPD < 0.5 cm; leaf litter
	UPRT21B-A5	11/15/12 08:59	yes	33	0.71	UPRT21B-BC04	RPD < 0.5 cm; leaf litter
UPRT21C	UPRT21C-A1	11/15/12 09:17	yes	17	0.74	na	RPD < 0.5 cm; shell fragments, leaf litter, trash, glass, wood debris
	UPRT21C-A2	11/15/12 09:32	yes	20	0.74	na	RPD < 0.5 cm; shell fragments, leaf litter, wood debris, glass, trash
	UPRT21C-A3	11/15/12 09:37	yes	26	0.74	UPRT21C-BC01	RPD = 0 cm; leaf litter, plants, wood, glass, shell fragments
	UPRT21C-A4	11/15/12 09:43	yes	19	0.74	UPRT21C-BC02	RPD = 0 cm; plants, wood debris, leaf litter, shell fragments
	UPRT21C-A5	11/15/12 09:51	yes	21	0.74	UPRT21C-BC03	RPD = 0 cm; shell fragments, plants, wood debris
	UPRT21C-A6	11/15/12 09:56	yes	20	0.74	UPRT21C-BC04	RPD = 0 cm; shell fragments, plants, wood debris
UPRT21D	UPRT21D-A1	11/15/12 10:08	yes	19	0.86	na	RPD < 0.5 cm; leaf litter, shell fragments, glass
	UPRT21D-A2	11/15/12 10:18	yes	20	0.86	UPRT21D-BC01	RPD = 0 cm; shell fragments, glass
	UPRT21D-A3	11/15/12 10:22	yes	19	0.86	UPRT21D-BC02	RPD = 0 cm; shell fragments, glass, leaf debris
	UPRT21D-A4	11/15/12 10:27	yes	21	0.86	UPRT21D-BC03	RPD < 0.5 cm; shell fragments, glass
	UPRT21D-A5	11/15/12 10:31	yes	17	0.86	UPRT21D-BC04	RPD = 0 cm; shell fragments, glass
UPRT21E	UPRT21E-A1	11/15/12 10:52	yes	26	1.22	na	RPD < 0.5 cm; shell fragments, leaf debris
	UPRT21E-A2	11/15/12 11:02	yes	24	1.22	UPRT21E-BC01	RPD = 0 cm; shell fragments
	UPRT21E-A3	11/15/12 11:04	no	0	1.22		insufficient penetration
	UPRT21E-A4	11/15/12 11:06	yes	19	1.22	UPRT21E-BC02	RPD = 0 cm; shell fragments
	UPRT21E-A5	11/15/12 11:11	yes	16	1.22	UPRT21E-BC03	RPD = 0 cm; shell fragments
	UPRT21E-A6	11/15/12 11:13	no	0	1.22	na	insufficient penetration
	UPRT21E-A7	11/15/12 11:14	no	0	1.22	na	insufficient penetration
	UPRT21E-A8	11/15/12 11:18	yes	23	1.22	UPRT21E-BC04	RPD = 0 cm; shell fragments

Table B-2. SQT sediment collection data

Sampling Location	Sediment Grab Attempt ^a	Attempt Date/Time	Acceptable Grab? ^b	Penetration Depth (cm) ^c	Water Depth (m) ^d	Benthic Invertebrate Community Subsample ID	Comments
UPRT21F	UPRT21F-A1	11/15/12 11:29	yes	20	0.52	na	RPD < 0.5 cm; leaf/wood debris, plastic
	UPRT21F-A2	11/15/12 11:42	yes	20	0.52	UPRT21F-BC01	RPD < 0.5 cm; leaf/wood debris
	UPRT21F-A3	11/15/12 11:47	yes	16	0.52	UPRT21F-BC02	RPD < 0.5 cm; leaf/wood debris, plastic
	UPRT21F-A4	11/15/12 11:55	yes	16	0.52	UPRT21F-BC03	RPD < 0.5 cm; leaf/wood debris, plastic
	UPRT21F-A5	11/15/12 12:05	yes	19	0.52	UPRT21F-BC04	RPD < 0.5 cm; leaf/wood debris
UPRT21G	UPRT21G-A1	11/15/12 12:25	yes	20	1.57	na	RPD = 0 cm; leaf litter, shell fragments, wood debris
	UPRT21G-A2	11/15/12 12:31	yes	25	1.57	UPRT21G-BC01	RPD = 0 cm; shell fragments
	UPRT21G-A3	11/15/12 12:35	yes	25	1.57	UPRT21G-BC02	RPD = 0 cm; shell fragments
	UPRT21G-A4	11/15/12 12:38	yes	25	1.57	UPRT21G-BC03	RPD = 0 cm; shell fragments, clams
	UPRT21G-A5	11/15/12 12:42	yes	24	1.57	UPRT21G-BC04	RPD = 0 cm; shell fragments, wood debris
UPRT22A	UPRT22A-A1	11/16/12 08:05	no	0	0.83	na	stick in jaws
	UPRT22A-A2	11/16/12 08:06	yes	20	0.83	na	RPD < 0.5 cm; wood, shell fragments, clams
	UPRT22A-A3	11/16/12 08:21	yes	20	0.83	na	RPD = 0 cm; wood, shell fragments, clams, brick fragment
	UPRT22A-A4	11/16/12 08:25	no	0	0.83	na	rock in jaws
	UPRT22A-A5	11/16/12 08:30	yes	17	0.83	UPRT22A-BC01	RPD = 0 cm; wood, shell fragments, clams
	UPRT22A-A6	11/16/12 08:34	yes	17	0.83	UPRT22A-BC02	RPD = 0 cm; wood, shell fragments, clams
	UPRT22A-A7	11/16/12 08:38	yes	17	0.83	UPRT22A-BC03	RPD = 0 cm; shell fragments, clams, wood/metal debris
	UPRT22A-A8	11/16/12 08:42	no	0	0.83	na	rock in jaws
	UPRT22A-A9	11/16/12 08:44	yes	16	0.83	UPRT22A-BC04	RPD = 0 cm; shell fragments, clams, wood, glass bottle

Table B-2. SQT sediment collection data

Sampling Location	Sediment Grab Attempt ^a	Attempt Date/Time	Acceptable Grab? ^b	Penetration Depth (cm) ^c	Water Depth (m) ^d	Benthic Invertebrate Community Subsample ID	Comments
UPRT22B	UPRT22B-A1	11/16/12 09:09	yes	23	0.99	na	RPD = 0 cm; clams, shell fragments, wood debris, glass
	UPRT22B-A2	11/16/12 09:17	yes	18	0.99	UPRT22B-BC01	RPD = 0 cm; clams, shell fragments, wood, glass
	UPRT22B-A3	11/16/12 09:22	no	18	0.99		sweater in jaws
	UPRT22B-A4	11/16/12 09:26	yes	16	0.99	UPRT22B-BC02	RPD = 0 cm; shell fragments, clams, wood, glass
	UPRT22B-A5	11/16/12 09:33	yes	17	0.99	UPRT22B-BC03	RPD = 0 cm; shell fragments, clams, wood, glass
	UPRT22B-A6	11/16/12 09:37	yes	17	0.99	UPRT22B-BC04	RPD = 0 cm; shell fragments, clams, wood, glass

^a All samples were collected using a grab sampler and obtained from the 0- to 15-cm depth of the grab.

^b A grab was considered acceptable if the sampler had penetrated a minimum of 16 cm (to ensure that 15 cm [6 in.] of the sample had not been in contact with the sampler).

^c Penetration depth was obtained using a ruler to measure the distance between the surface sediment and the top of the sampler frame and subtracting from the depth of the sampler.

^d Water depth was measured using a lead line.

ID – identification

na – not available

RPD – redox potential discontinuity

SQT – sediment quality triad

USEPA – US Environmental Protection Agency

Table B-3. Field-measured water quality parameters for SQT locations

Sampling Location	Collection Date/Time	Water Depth (ft)	Temperature (°C) ^a	DO (mg/L) ^a	Conductivity (µS/cm) ^a	Specific Conductivity (µS/cm) ^b	pH ^a
UPRT18H	11/12/12 12:17	3.7	8.8	12.50	0.54	0.78	7.9
UPRT18I	11/12/12 10:13	5.6	8.6	12.31	0.51	0.75	7.9
UPRT18J	11/12/12 13:21	1.0	8.7	12.50	0.52	0.76	7.8
UPRT18K	11/12/12 14:37	0.8	8.7	12.38	0.52	0.80	7.7
UPRT19J	11/13/12 08:20	3.8	9.9	12.58	0.54	0.76	7.9
UPRT19K	11/13/12 09:46	1.0	9.9	12.43	0.53	0.77	7.9
UPRT19L	11/13/12 10:55	2.5	9.8	11.70	0.53	0.74	7.7
UPRT19M	11/13/12 11:59	5.5	10.0	11.40	0.52	0.72	7.7
UPRT20A	11/13/12 13:30	9.9	9.9	11.41	0.53	0.72	7.7
UPRT20B	11/13/12 14:41	2.6	9.6	11.05	0.53	0.72	7.7
UPRT20C	11/14/12 08:15	2.4	8.5	11.04	0.53	0.72	7.8
UPRT20D	11/14/12 09:14	5.1	8.5	11.03	0.51	0.72	7.6
UPRT20E	11/14/12 11:12	2.2	8.4	11.26	0.51	0.73	7.8
UPRT20F	11/14/12 11:49	5.7	8.8	11.42	0.48	0.69	7.8
UPRT20G	11/14/12 12:52	3.0	8.7	11.74	0.48	0.69	7.7
UPRT21A	11/14/12 13:52	6.4	9.1	12.76	0.43	0.70	8.0
UPRT21B	11/15/12 08:19	2.3	7.6	11.70	0.43	0.70	7.7
UPRT21C	11/15/12 09:17	2.4	7.8	11.82	0.47	0.70	7.8
UPRT21D	11/15/12 10:08	2.8	8.0	12.42	0.43	0.70	7.9
UPRT21E	11/15/12 10:52	4.0	8.3	12.95	0.47	0.69	8.0
UPRT21F	11/15/12 11:29	1.7	8.8	12.53	0.48	0.69	7.9
UPRT21G	11/15/12 12:25	5.2	8.9	13.66	0.47	0.68	8.2
UPRT22A	11/16/12 08:06	2.7	7.6	12.38	0.45	0.68	7.9
UPRT22B	11/16/12 09:09	3.3	7.7	12.73	0.44	0.68	8.0

^a Temperature, DO, conductivity, and pH were measured using a YSI® multi-probe meter. The probe was suspended 1 ft above the sediment for all measurements.

^b Specific conductance was calculated from conductivity and temperature measurements.

C – Celsius

DO – dissolved oxygen

SQT – sediment quality triad

APPENDIX C. DATA SUMMARY TABLES

2012 Sediment Toxicity Reference Data for the LPRSA

Appendix C

Table C-1. Sediment Toxicity Test Reference Data, shown by replicate



Location ID	Laboratory Sample ID	Bioassay Lab Replicate ID	<i>Chironomus dilutus</i> 10-day survival and growth						<i>Hyalella azteca</i> 28-day survival and growth					
			Survival		Weight ^a (mg)		Biomass ^b (mg)		Survival		Weight ^c (mg)		Biomass ^d (mg)	
			Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final
Lab Control	22800-000	1	10	9	0.401	1.6456	0.401	1.481	10	9	0.015	0.7256	0.015	0.653
Lab Control	22800-000	2	10	10	0.401	2.24	0.401	2.24	10	9	0.015	0.7067	0.015	0.636
Lab Control	22800-000	3	10	10	0.401	2.47	0.401	2.47	10	10	0.015	0.726	0.015	0.726
Lab Control	22800-000	4	11	11	0.401	1.72	0.401	1.72	10	7	0.015	0.5743	0.015	0.402
Lab Control	22800-000	5	10	10	0.401	1.775	0.401	1.775	10	10	0.015	0.494	0.015	0.494
Lab Control	22800-000	6	10	10	0.401	1.8125	0.401	1.813	10	10	0.015	0.48	0.015	0.48
Lab Control	22800-000	7	10	9	0.401	1.7883	0.401	1.533	10	8	0.015	0.7275	0.015	0.582
Lab Control	22800-000	8	10	10	0.401	1.5567	0.401	1.557	10	9	0.015	0.5633	0.015	0.507
UPRT18H	22800-002	1	10	9	0.401	na ^e	0.401	na ^e	10	8	0.015	0.4188	0.015	0.335
UPRT18H	22800-002	2	10	9	0.401	2.0067	0.401	1.806	10	6	0.015	0.37	0.015	0.222
UPRT18H	22800-002	3	10	10	0.401	na ^e	0.401	na ^e	10	10	0.015	0.326	0.015	0.326
UPRT18H	22800-002	4	10	10	0.401	1.333	0.401	1.333	10	10	0.015	0.362	0.015	0.362
UPRT18H	22800-002	5	10	9	0.401	1.8267	0.401	1.566	10	8	0.015	0.2075	0.015	0.166
UPRT18H	22800-002	6	10	9	0.401	1.825	0.401	1.564	10	9	0.015	0.3122	0.015	0.281
UPRT18H	22800-002	7	10	10	0.401	1.3063	0.401	1.306	10	9	0.015	0.2444	0.015	0.22
UPRT18H	22800-002	8	10	9	0.401	1	0.401	0.889	10	8	0.015	0.2463	0.015	0.197
UPRT18I	22800-001	1	10	10	0.401	1.319	0.401	1.319	10	10	0.015	0.292	0.015	0.292
UPRT18I	22800-001	2	10	8	0.401	1.862	0.401	1.33	10	7	0.015	0.33	0.015	0.231
UPRT18I	22800-001	3	10	6	0.401	na ^e	0.401	na ^e	10	7	0.015	0.2129	0.015	0.149
UPRT18I	22800-001	4	10	10	0.401	1.3667	0.401	1.367	10	9	0.015	0.2156	0.015	0.194
UPRT18I	22800-001	5	10	3	0.401	2.0167	0.401	0.605	10	7	0.015	0.2114	0.015	0.148
UPRT18I	22800-001	6	10	8	0.401	2.1871	0.401	1.701	10	10	0.015	0.22	0.015	0.22
UPRT18I	22800-001	7	10	6	0.401	1.694	0.401	0.941	10	6	0.015	0.185	0.015	0.111
UPRT18I	22800-001	8	10	6	0.401	1.5283	0.401	0.917	10	2	0.015	0.36	0.015	0.072
UPRT18J	22800-003	1	10	8	0.401	1.3987	0.401	1.119	10	8	0.015	0.29	0.015	0.232
UPRT18J	22800-003	2	10	10	0.401	1.6111	0.401	1.611	10	10	0.015	0.369	0.015	0.369
UPRT18J	22800-003	3	10	10	0.401	1.7675	0.401	1.768	10	9	0.015	0.3811	0.015	0.343
UPRT18J	22800-003	4	10	10	0.401	1.363	0.401	1.363	10	9	0.015	0.4478	0.015	0.403
UPRT18J	22800-003	5	10	9	0.401	1.6313	0.401	1.45	10	9	0.015	0.2844	0.015	0.256
UPRT18J	22800-003	6	10	10	0.401	1.9475	0.401	1.948	10	9	0.015	0.3278	0.015	0.295
UPRT18J	22800-003	7	10	7	0.401	1.362	0.401	0.851	10	9	0.015	0.2556	0.015	0.23
UPRT18J	22800-003	8	10	7	0.401	1.276	0.401	0.797	10	9	0.015	0.3167	0.015	0.285

2012 Sediment Toxicity Reference Data for the LPRSA

Appendix C

Table C-1. Sediment Toxicity Test Reference Data, shown by replicate



Location ID	Laboratory Sample ID	Bioassay Lab Replicate ID	<i>Chironomus dilutus</i> 10-day survival and growth						<i>Hyalella azteca</i> 28-day survival and growth					
			Survival		Weight ^a (mg)		Biomass ^b (mg)		Survival		Weight ^c (mg)		Biomass ^d (mg)	
			Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final
UPRT18K	22800-004	1	10	8	0.401	1.4925	0.401	1.194	10	8	0.015	0.2663	0.015	0.213
UPRT18K	22800-004	2	10	8	0.401	1.4786	0.401	1.15	10	6	0.015	0.385	0.015	0.231
UPRT18K	22800-004	3	10	9	0.401	na ^e	0.401	na ^e	10	9	0.015	0.3689	0.015	0.332
UPRT18K	22800-004	4	10	8	0.401	1.3462	0.401	1.077	10	10	0.015	0.364	0.015	0.364
UPRT18K	22800-004	5	10	10	0.401	1.569	0.401	1.569	10	8	0.015	0.3175	0.015	0.254
UPRT18K	22800-004	6	10	8	0.401	1.547	0.401	1.238	10	6	0.015	0.4817	0.015	0.289
UPRT18K	22800-004	7	10	9	0.401	1.4011	0.401	1.261	10	7	0.015	0.5171	0.015	0.362
UPRT18K	22800-004	8	10	9	0.401	1.4288	0.401	1.27	10	6	0.015	0.3067	0.015	0.184
UPRT19J	22800-005	1	10	3	0.401	na ^e	0.401	na ^e	10	0	0.015	na ^f	0.015	0
UPRT19J	22800-005	2	10	0	0.401	na ^f	0.401	0	10	0	0.015	na ^f	0.015	0
UPRT19J	22800-005	3	10	0	0.401	na ^f	0.401	0	10	0	0.015	na ^f	0.015	0
UPRT19J	22800-005	4	10	0	0.401	na ^f	0.401	0	10	0	0.015	na ^f	0.015	0
UPRT19J	22800-005	5	10	0	0.401	na ^f	0.401	0	10	0	0.015	na ^f	0.015	0
UPRT19J	22800-005	6	10	0	0.401	na ^f	0.401	0	10	0	0.015	na ^f	0.015	0
UPRT19J	22800-005	7	10	0	0.401	na ^f	0.401	0	10	0	0.015	na ^f	0.015	0
UPRT19J	22800-005	8	10	0	0.401	na ^f	0.401	0	10	0	0.015	na ^f	0.015	0
UPRT19K	22800-006	1	10	8	0.401	1.7129	0.401	1.332	10	10	0.015	0.475	0.015	0.475
UPRT19K	22800-006	2	10	8	0.401	1.702	0.401	1.362	10	10	0.015	0.436	0.015	0.436
UPRT19K	22800-006	3	10	10	0.401	1.431	0.401	1.431	10	8	0.015	0.3825	0.015	0.306
UPRT19K	22800-006	4	10	2	0.401	2.015	0.401	0.403	10	8	0.015	0.3587	0.015	0.287
UPRT19K	22800-006	5	10	9	0.401	1.6025	0.401	1.282	10	8	0.015	0.285	0.015	0.228
UPRT19K	22800-006	6	10	8	0.401	1.822	0.401	1.301	10	10	0.015	0.44	0.015	0.44
UPRT19K	22800-006	7	10	7	0.401	1.6086	0.401	1.126	10	8	0.015	0.36	0.015	0.288
UPRT19K	22800-006	8	10	7	0.401	1.6457	0.401	1.152	10	9	0.015	0.3456	0.015	0.311
UPRT19L	22800-007	1	10	7	0.401	na ^e	0.401	na ^e	10	9	0.015	0.5667	0.015	0.51
UPRT19L	22800-007	2	10	8	0.401	2.1217	0.401	1.591	10	8	0.015	0.33	0.015	0.264
UPRT19L	22800-007	3	10	7	0.401	1.7743	0.401	1.242	10	7	0.015	0.3343	0.015	0.234
UPRT19L	22800-007	4	10	10	0.401	1.61	0.401	1.61	10	5	0.015	0.38	0.015	0.19
UPRT19L	22800-007	5	10	7	0.401	1.5014	0.401	1.051	10	5	0.015	0.434	0.015	0.217
UPRT19L	22800-007	6	10	8	0.401	1.7071	0.401	1.328	10	6	0.015	0.3417	0.015	0.205
UPRT19L	22800-007	7	10	6	0.401	1.48	0.401	0.822	10	3	0.015	0.1167	0.015	0.035

2012 Sediment Toxicity Reference Data for the LPRSA

Appendix C

Table C-1. Sediment Toxicity Test Reference Data, shown by replicate



Location ID	Laboratory Sample ID	Bioassay Lab Replicate ID	<i>Chironomus dilutus</i> 10-day survival and growth						<i>Hyalella azteca</i> 28-day survival and growth					
			Survival		Weight ^a (mg)		Biomass ^b (mg)		Survival		Weight ^c (mg)		Biomass ^d (mg)	
			Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final
UPRT19L	22800-007	8	10	9	0.401	1.3171	0.401	1.153	10	9	0.015	0.2256	0.015	0.203
UPRT19M	22800-008	1	10	10	0.401	1.397	0.401	1.397	10	2	0.015	0.395	0.015	0.079
UPRT19M	22800-008	2	10	8	0.401	1.8543	0.401	1.442	10	4	0.015	0.3425	0.015	0.137
UPRT19M	22800-008	3	10	5	0.401	na ^e	0.401	na ^e	10	1	0.015	0.36	0.015	0.036
UPRT19M	22800-008	4	10	9	0.401	1.4822	0.401	1.334	10	6	0.015	0.3733	0.015	0.224
UPRT19M	22800-008	5	10	7	0.401	2.37	0.401	1.354	10	3	0.015	0.3367	0.015	0.101
UPRT19M	22800-008	6	10	9	0.401	1.7263	0.401	1.534	10	7	0.015	0.3043	0.015	0.213
UPRT19M	22800-008	7	10	8	0.401	1.6917	0.401	1.269	10	7	0.015	0.3414	0.015	0.239
UPRT19M	22800-008	8	10	8	0.401	1.3125	0.401	1.05	10	5	0.015	0.304	0.015	0.152
UPRT20A	22800-009	1	10	10	0.401	1.5044	0.401	1.504	10	5	0.015	0.302	0.015	0.151
UPRT20A	22800-009	2	10	9	0.401	1.9744	0.401	1.777	10	7	0.015	0.2871	0.015	0.201
UPRT20A	22800-009	3	10	8	0.401	1.5457	0.401	1.202	10	8	0.015	0.1938	0.015	0.155
UPRT20A	22800-009	4	10	6	0.401	1.916	0.401	1.064	10	9	0.015	0.3078	0.015	0.277
UPRT20A	22800-009	5	10	10	0.401	1.861	0.401	1.861	10	4	0.015	0.27	0.015	0.108
UPRT20A	22800-009	6	10	6	0.401	3.01	0.401	1.29	10	6	0.015	0.29	0.015	0.174
UPRT20A	22800-009	7	10	5	0.401	1.952	0.401	0.976	10	0	0.015	na ^f	0.015	0
UPRT20A	22800-009	8	10	9	0.401	1.5357	0.401	1.344	10	9	0.015	0.1133	0.015	0.102
UPRT20B	22800-010	1	10	10	0.401	1.18	0.401	1.18	10	7	0.015	0.2514	0.015	0.176
UPRT20B	22800-010	2	10	8	0.401	1.965	0.401	1.31	10	10	0.015	0.41	0.015	0.41
UPRT20B	22800-010	3	10	5	0.401	1.65	0.401	0.733	10	9	0.015	0.3511	0.015	0.316
UPRT20B	22800-010	4	10	10	0.401	1.844	0.401	1.844	10	8	0.015	0.21	0.015	0.168
UPRT20B	22800-010	5	10	8	0.401	2.1638	0.401	1.731	10	7	0.015	0.4086	0.015	0.286
UPRT20B	22800-010	6	10	8	0.401	2.7517	0.401	2.064	10	9	0.015	0.2567	0.015	0.231
UPRT20B	22800-010	7	10	8	0.401	2.2983	0.401	1.724	10	9	0.015	0.3289	0.015	0.296
UPRT20B	22800-010	8	10	7	0.401	1.7557	0.401	1.229	10	1	0.015	0.59	0.015	0.059
UPRT20C	22800-011	1	10	9	0.401	1.6375	0.401	1.456	10	7	0.015	0.48	0.015	0.336
UPRT20C	22800-011	2	10	9	0.401	na ^e	0.401	na ^e	10	8	0.015	0.5513	0.015	0.441
UPRT20C	22800-011	3	10	10	0.401	na ^e	0.401	na ^e	10	na	0.015	na ^g	0.015	na ^g
UPRT20C	22800-011	4	10	9	0.401	1.8971	0.401	1.66	10	4	0.015	0.3575	0.015	0.143
UPRT20C	22800-011	5	10	9	0.401	2.24	0.401	2.016	10	8	0.015	0.34	0.015	0.272
UPRT20C	22800-011	6	10	8	0.401	1.3967	0.401	1.048	10	10	0.015	0.473	0.015	0.473
UPRT20C	22800-011	7	10	9	0.401	1.7856	0.401	1.607	10	10	0.015	0.351	0.015	0.351

2012 Sediment Toxicity Reference Data for the LPRSA

Appendix C

Table C-1. Sediment Toxicity Test Reference Data, shown by replicate



Location ID	Laboratory Sample ID	Bioassay Lab Replicate ID	<i>Chironomus dilutus</i> 10-day survival and growth						<i>Hyalella azteca</i> 28-day survival and growth					
			Survival		Weight ^a (mg)		Biomass ^b (mg)		Survival		Weight ^c (mg)		Biomass ^d (mg)	
			Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final
UPRT20C	22800-011	8	10	9	0.401	1.6467	0.401	1.482	10	6	0.015	0.2083	0.015	0.125
UPRT20D	22800-012	1	10	5	0.401	1.476	0.401	0.738	10	10	0.015	0.372	0.015	0.372
UPRT20D	22800-012	2	11	11	0.401	1.5578	0.401	1.558	10	9	0.015	0.3456	0.015	0.311
UPRT20D	22800-012	3	10	9	0.401	1.2533	0.401	1.128	10	7	0.015	0.5071	0.015	0.355
UPRT20D	22800-012	4	10	9	0.401	1.36	0.401	1.224	10	9	0.015	0.3033	0.015	0.273
UPRT20D	22800-012	5	10	9	0.401	1.39	0.401	1.236	10	3	0.015	0.36	0.015	0.108
UPRT20D	22800-012	6	10	7	0.401	2.5625	0.401	1.464	10	10	0.015	0.197	0.015	0.197
UPRT20D	22800-012	7	10	4	0.401	1.722	0.401	0.689	10	8	0.015	0.3587	0.015	0.287
UPRT20D	22800-012	8	10	10	0.401	1.279	0.401	1.279	10	3	0.015	0.1	0.015	0.03
UPRT20E	22800-013	1	10	9	0.401	1.4383	0.401	1.233	10	6	0.015	0.405	0.015	0.243
UPRT20E	22800-013	2	10	10	0.401	1.7637	0.401	1.764	10	6	0.015	0.5017	0.015	0.301
UPRT20E	22800-013	3	10	8	0.401	1.54	0.401	1.232	10	8	0.015	0.4587	0.015	0.367
UPRT20E	22800-013	4	10	5	0.401	1.874	0.401	0.937	10	7	0.015	0.33	0.015	0.231
UPRT20E	22800-013	5	10	10	0.401	1.567	0.401	1.567	10	4	0.015	0.25	0.015	0.1
UPRT20E	22800-013	6	10	9	0.401	1.9671	0.401	1.721	10	8	0.015	0.3088	0.015	0.247
UPRT20E	22800-013	7	10	9	0.401	1.6487	0.401	1.466	10	8	0.015	0.2813	0.015	0.225
UPRT20E	22800-013	8	10	8	0.401	1.288	0.401	0.92	10	6	0.015	0.1567	0.015	0.094
UPRT20F	22800-014	1	10	6	0.401	na ^e	0.401	na ^e	10	0	0.015	na ^b	0.015	0
UPRT20F	22800-014	2	10	7	0.401	2.08	0.401	1.387	10	0	0.015	na ^b	0.015	0
UPRT20F	22800-014	3	10	6	0.401	0.9067	0.401	0.544	10	0	0.015	na ^b	0.015	0
UPRT20F	22800-014	4	10	6	0.401	1.0383	0.401	0.623	10	0	0.015	na ^b	0.015	0
UPRT20F	22800-014	5	10	7	0.401	0.9271	0.401	0.649	10	0	0.015	na ^b	0.015	0
UPRT20F	22800-014	6	10	2	0.401	0.9	0.401	0.18	10	0	0.015	na ^b	0.015	0
UPRT20F	22800-014	7	10	5	0.401	1.344	0.401	0.672	10	0	0.015	na ^b	0.015	0
UPRT20F	22800-014	8	10	4	0.401	1.252	0.401	0.501	10	1	0.015	0.07	0.015	0.007
UPRT20G	22800-015	1	10	6	0.401	1.04	0.401	0.624	10	8	0.015	0.5212	0.015	0.417
UPRT20G	22800-015	2	10	8	0.401	na ^e	0.401	na ^e	10	6	0.015	0.415	0.015	0.249
UPRT20G	22800-015	3	10	8	0.401	1.9733	0.401	1.48	10	7	0.015	0.24	0.015	0.168
UPRT20G	22800-015	4	10	9	0.401	2.084	0.401	1.737	10	8	0.015	0.2987	0.015	0.239
UPRT20G	22800-015	5	10	9	0.401	1.7422	0.401	1.568	10	5	0.015	0.328	0.015	0.164
UPRT20G	22800-015	6	10	10	0.401	1.86	0.401	1.86	10	9	0.015	0.1844	0.015	0.166

2012 Sediment Toxicity Reference Data for the LPRSA

Appendix C

Table C-1. Sediment Toxicity Test Reference Data, shown by replicate



Location ID	Laboratory Sample ID	Bioassay Lab Replicate ID	<i>Chironomus dilutus</i> 10-day survival and growth						<i>Hyalella azteca</i> 28-day survival and growth					
			Survival		Weight ^a (mg)		Biomass ^b (mg)		Survival		Weight ^c (mg)		Biomass ^d (mg)	
			Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final
UPRT20G	22800-015	7	10	9	0.401	2.01	0.401	1.787	10	5	0.015	0.156	0.015	0.078
UPRT20G	22800-015	8	10	9	0.401	1.6117	0.401	1.381	10	6	0.015	0.1883	0.015	0.113
UPRT21A	22800-016	1	10	9	0.401	1.4011	0.401	1.261	10	6	0.015	0.5267	0.015	0.316
UPRT21A	22800-016	2	10	9	0.401	2.3833	0.401	2.043	10	8	0.015	0.3225	0.015	0.258
UPRT21A	22800-016	3	10	8	0.401	2.36	0.401	1.686	10	9	0.015	0.2678	0.015	0.241
UPRT21A	22800-016	4	10	8	0.401	1.894	0.401	1.353	10	4	0.015	0.2725	0.015	0.109
UPRT21A	22800-016	5	10	8	0.401	1.31	0.401	1.048	10	5	0.015	0.34	0.015	0.17
UPRT21A	22800-016	6	10	10	0.401	1.7	0.401	1.7	10	9	0.015	0.3	0.015	0.27
UPRT21A	22800-016	7	10	9	0.401	1.2312	0.401	1.094	10	7	0.015	0.2486	0.015	0.174
UPRT21A	22800-016	8	10	10	0.401	1.2975	0.401	1.298	10	7	0.015	0.2914	0.015	0.204
UPRT21B	22800-017	1	10	7	0.401	2.018	0.401	1.261	10	2	0.015	0.11	0.015	0.022
UPRT21B	22800-017	2	10	8	0.401	1.3943	0.401	1.084	10	6	0.015	0.3067	0.015	0.184
UPRT21B	22800-017	3	10	8	0.401	na ^e	0.401	na ^e	10	3	0.015	0.4233	0.015	0.127
UPRT21B	22800-017	4	10	9	0.401	1.7644	0.401	1.588	10	1	0.015	0.09	0.015	0.009
UPRT21B	22800-017	5	10	8	0.401	2.2414	0.401	1.743	10	0	0.015	na ^f	0.015	0
UPRT21B	22800-017	6	10	6	0.401	2.7283	0.401	1.637	10	1	0.015	0.1	0.015	0.01
UPRT21B	22800-017	7	10	9	0.401	3.1	0.401	2.48	10	1	0.015	0.21	0.015	0.021
UPRT21B	22800-017	8	10	8	0.401	2.3983	0.401	1.799	10	1	0.015	0.17	0.015	0.017
UPRT21C	22800-018	1	10	7	0.401	1.38	0.401	0.966	10	9	0.015	0.3022	0.015	0.272
UPRT21C	22800-018	2	10	9	0.401	na ^e	0.401	na ^e	10	7	0.015	0.4171	0.015	0.292
UPRT21C	22800-018	3	10	7	0.401	2.32	0.401	0.928	10	7	0.015	0.3843	0.015	0.269
UPRT21C	22800-018	4	10	7	0.401	1.9771	0.401	1.384	10	8	0.015	0.4087	0.015	0.327
UPRT21C	22800-018	5	10	6	0.401	1.7633	0.401	1.058	10	8	0.015	0.2925	0.015	0.234
UPRT21C	22800-018	6	10	8	0.401	2.4	0.401	1.867	10	7	0.015	0.3243	0.015	0.227
UPRT21C	22800-018	7	10	7	0.401	2.244	0.401	1.403	10	8	0.015	0.375	0.015	0.3
UPRT21C	22800-018	8	10	7	0.401	1.6117	0.401	1.074	10	8	0.015	0.3237	0.015	0.259
UPRT21D	22800-019	1	10	7	0.401	1.8717	0.401	1.248	10	9	0.015	0.3711	0.015	0.334
UPRT21D	22800-019	2	10	8	0.401	2.1417	0.401	1.606	10	6	0.015	0.5033	0.015	0.302
UPRT21D	22800-019	3	10	9	0.401	na ^e	0.401	na ^e	10	5	0.015	0.234	0.015	0.117
UPRT21D	22800-019	4	10	9	0.401	1.6289	0.401	1.466	10	9	0.015	0.2167	0.015	0.195
UPRT21D	22800-019	5	10	4	0.401	2.592	0.401	1.037	10	6	0.015	0.28	0.015	0.168
UPRT21D	22800-019	6	10	8	0.401	1.7757	0.401	1.381	10	7	0.015	0.2386	0.015	0.167

2012 Sediment Toxicity Reference Data for the LPRSA

Appendix C

Table C-1. Sediment Toxicity Test Reference Data, shown by replicate



Location ID	Laboratory Sample ID	Bioassay Lab Replicate ID	<i>Chironomus dilutus</i> 10-day survival and growth						<i>Hyalella azteca</i> 28-day survival and growth					
			Survival		Weight ^a (mg)		Biomass ^b (mg)		Survival		Weight ^c (mg)		Biomass ^d (mg)	
			Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final
UPRT21D	22800-019	7	10	6	0.401	2.217	0.401	1.109	10	1	0.015	0.21	0.015	0.021
UPRT21D	22800-019	8	10	6	0.401	2.2433	0.401	1.346	10	7	0.015	0.1457	0.015	0.102
UPRT21E	22800-020	1	10	8	0.401	1.65	0.401	1.32	10	8	0.015	0.4312	0.015	0.345
UPRT21E	22800-020	2	10	10	0.401	1.8029	0.401	1.803	10	5	0.015	0.422	0.015	0.211
UPRT21E	22800-020	3	10	6	0.401	1.3067	0.401	0.56	10	1	0.015	0.19	0.015	0.019
UPRT21E	22800-020	4	10	8	0.401	1.5725	0.401	1.258	10	5	0.015	0.276	0.015	0.138
UPRT21E	22800-020	5	10	9	0.401	1.716	0.401	1.43	10	7	0.015	0.2257	0.015	0.158
UPRT21E	22800-020	6	10	10	0.401	1.6122	0.401	1.612	10	7	0.015	0.21	0.015	0.147
UPRT21E	22800-020	7	10	9	0.401	1.8343	0.401	1.605	10	7	0.015	0.2	0.015	0.14
UPRT21E	22800-020	8	10	7	0.401	1.6	0.401	0.8	10	6	0.015	0.195	0.015	0.117
UPRT21F	22800-021	1	10	8	0.401	1.895	0.401	1.516	10	8	0.015	0.3787	0.015	0.303
UPRT21F	22800-021	2	10	8	0.401	2.41	0.401	1.721	10	10	0.015	0.389	0.015	0.389
UPRT21F	22800-021	3	10	8	0.401	2.3117	0.401	1.734	10	7	0.015	0.3486	0.015	0.244
UPRT21F	22800-021	4	10	10	0.401	2.1871	0.401	2.187	10	8	0.015	0.3787	0.015	0.303
UPRT21F	22800-021	5	10	8	0.401	2.0557	0.401	1.599	10	8	0.015	0.2488	0.015	0.199
UPRT21F	22800-021	6	10	9	0.401	3.0233	0.401	2.591	10	5	0.015	0.256	0.015	0.128
UPRT21F	22800-021	7	11	11	0.401	1.9686	0.401	1.969	10	5	0.015	0.29	0.015	0.145
UPRT21F	22800-021	8	10	9	0.401	2.007	0.401	1.606	10	7	0.015	0.4529	0.015	0.317
UPRT21G	22800-022	1	10	9	0.401	1.5012	0.401	1.334	10	8	0.015	0.385	0.015	0.308
UPRT21G	22800-022	2	10	8	0.401	1.745	0.401	1.163	10	8	0.015	0.4825	0.015	0.386
UPRT21G	22800-022	3	10	9	0.401	na ^e	0.401	na ^e	10	3	0.015	0.3333	0.015	0.1
UPRT21G	22800-022	4	10	3	0.401	2.3733	0.401	0.712	10	8	0.015	0.4112	0.015	0.329
UPRT21G	22800-022	5	10	9	0.401	1.48	0.401	1.316	10	8	0.015	0.3375	0.015	0.27
UPRT21G	22800-022	6	10	10	0.401	1.9883	0.401	1.988	10	1	0.015	1.65	0.015	0.165
UPRT21G	22800-022	7	10	8	0.401	1.7843	0.401	1.388	10	6	0.015	0.2883	0.015	0.173
UPRT21G	22800-022	8	10	10	0.401	1.113	0.401	1.113	10	8	0.015	0.3625	0.015	0.29
UPRT22A	22800-023	1	10	8	0.401	1.5086	0.401	1.173	10	9	0.015	0.4344	0.015	0.391
UPRT22A	22800-023	2	10	4	0.401	2.8725	0.401	1.149	10	6	0.015	0.28	0.015	0.168
UPRT22A	22800-023	3	11	11	0.401	1.373	0.401	1.373	10	10	0.015	0.475	0.015	0.475
UPRT22A	22800-023	4	10	9	0.401	1.487	0.401	1.322	10	7	0.015	0.3571	0.015	0.25
UPRT22A	22800-023	5	10	7	0.401	1.6233	0.401	1.082	10	8	0.015	0.2863	0.015	0.229
UPRT22A	22800-023	6	10	8	0.401	1.978	0.401	1.413	10	8	0.015	0.3713	0.015	0.297

2012 Sediment Toxicity Reference Data for the LPRSA

Appendix C

Table C-1. Sediment Toxicity Test Reference Data, shown by replicate



Location ID	Laboratory Sample ID	Bioassay Lab Replicate ID	<i>Chironomus dilutus</i> 10-day survival and growth						<i>Hyalella azteca</i> 28-day survival and growth					
			Survival		Weight ^a (mg)		Biomass ^b (mg)		Survival		Weight ^c (mg)		Biomass ^d (mg)	
			Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final
UPRT22A	22800-023	7	10	5	0.401	2.425	0.401	0.693	10	8	0.015	0.3587	0.015	0.287
UPRT22A	22800-023	8	10	5	0.401	2.467	0.401	1.097	10	8	0.015	0.2763	0.015	0.221
UPRT22B	22800-024	1	10	8	0.401	1.2586	0.401	3979	10	5	0.015	0.702	0.015	0.351
UPRT22B	22800-024	2	10	9	0.401	1.8214	0.401	1.594	10	6	0.015	0.4883	0.015	0.293
UPRT22B	22800-024	3	10	8	0.401	1.935	0.401	1.29	10	7	0.015	0.5543	0.015	0.388
UPRT22B	22800-024	4	10	6	0.401	2.025	0.401	1.215	10	7	0.015	0.4671	0.015	0.327
UPRT22B	22800-024	5	10	8	0.401	1.78	0.401	1.424	10	6	0.015	0.3633	0.015	0.218
UPRT22B	22800-024	6	10	8	0.401	1.7229	0.401	1.34	10	9	0.015	0.3233	0.015	0.291
UPRT22B	22800-024	7	10	10	0.401	1.6412	0.401	1.641	10	5	0.015	0.326	0.015	0.163
UPRT22B	22800-024	8	10	8	0.401	1.91	0.401	1.364	10	2	0.015	0.44	0.015	0.088

AFDW ash free dry weight ID identification na not available

^a Chironomus weight is calculated as the total AFDW for each replicate divided by the number of surviving larvae

^b Chironomus biomass is calculated as the total AFDW for each replicate divided by the initial number of organisms introduced into the test chamber minus the number of organisms that either emerged or pupated during the test.

^c Hyalella weight is the total weight for each replicate divided by the number of survivors.

^d Hyalella biomass is the total weight for each replicate divided by the initial number of organisms introduced into the test chamber.

^e Weight and biomass data are not available because the organisms were dropped before weight data could be obtained.

^f Weight data cannot be calculated because there were no survivors.

^g No data are available because the test chamber was lost during end of test procedures.

2012 Sediment Toxicity Test Reference Data for the LPRSA

Appendix C

Appendix Table C-2. Sediment Toxicity Test Reference Data, shown by location



Location ID	Laboratory Sample ID	<i>Chironomus dilutus</i> 10-day survival and growth						<i>Hyalella azteca</i> 28-day survival and growth					
		Survival (%)		Weight ^a (mg)		Biomass ^b (mg)		Survival (%)		Weight ^c (mg)		Biomass ^d (mg)	
		Mean	StDev	Mean	StDev	Mean	StDev	Mean	StDev	Mean	StDev	Mean	StDev
Lab Control	22800-000	98	4.6	1.88	0.313	1.82	0.354	90	11	0.625	0.108	0.56	0.108
UPRT18H	22800-002	94	5.2	1.55	0.392	1.41	0.314	85	13	0.311	0.073	0.264	0.0723
UPRT18I	22800-001	71	24	1.71	0.329	1.17	0.366	73	26	0.253	0.0648	0.177	0.071
UPRT18J	22800-003	89	14	1.54	0.234	1.36	0.417	90	5.3	0.334	0.0624	0.302	0.0643
UPRT18K	22800-004	86	7.4	1.47	0.0796	1.25	0.156	75	15	0.376	0.0859	0.279	0.069
UPRT19J	22800-005	3.8	11	na ^e	na ^e	na ^e	na ^e	0	0	na ^f	na ^f	0	0
UPRT19K	22800-006	74	24	1.69	0.172	1.17	0.328	89	9.9	0.385	0.0616	0.346	0.0904
UPRT19L	22800-007	78	13	1.64	0.26	1.26	0.284	65	21	0.341	0.134	0.232	0.131
UPRT19M	22800-008	80	15	1.69	0.356	1.34	0.153	44	23	0.345	0.0315	0.148	0.0736
UPRT20A	22800-009	79	20	1.91	0.486	1.38	0.318	60	30	0.252	0.0722	0.146	0.0809
UPRT20B	22800-010	80	16	1.95	0.469	1.48	0.437	75	28	0.351	0.121	0.243	0.108
UPRT20C	22800-011	90	5.3	1.77	0.286	1.55	0.316	76	21	0.394	0.115	0.306	0.135
UPRT20D	22800-012	79	23	1.58	0.427	1.16	0.311	74	29	0.318	0.123	0.242	0.121
UPRT20E	22800-013	85	16	1.64	0.226	1.36	0.328	66	14	0.337	0.114	0.226	0.0922
UPRT20F	22800-014	54	17	1.21	0.423	0.651	0.365	1.3	3.5	0.07	na ^g	0.0009	0.0025
UPRT20G	22800-015	85	12	1.76	0.357	1.49	0.419	68	15	0.291	0.127	0.199	0.105
UPRT21A	22800-016	89	8.3	1.7	0.473	1.44	0.343	69	18	0.321	0.0882	0.218	0.0663
UPRT21B	22800-017	79	9.9	2.23	0.576	1.66	0.446	19	19	0.201	0.124	0.0488	0.068
UPRT21C	22800-018	73	8.9	1.96	0.387	1.24	0.335	78	7.1	0.353	0.0487	0.273	0.0335
UPRT21D	22800-019	71	17	2.07	0.329	1.31	0.199	63	25	0.275	0.113	0.176	0.103
UPRT21E	22800-020	84	14	1.64	0.164	1.3	0.424	58	22	0.269	0.101	0.159	0.0923
UPRT21F	22800-021	88	8.9	2.23	0.365	1.87	0.366	73	17	0.343	0.0717	0.254	0.0909
UPRT21G	22800-022	83	23	1.71	0.404	1.29	0.383	63	28	0.531	0.456	0.253	0.0969
UPRT22A	22800-023	70	21	1.97	0.56	1.16	0.228	80	12	0.355	0.0732	0.29	0.0996
UPRT22B	22800-024	81	11	1.76	0.237	1.36	0.21	59	20	0.458	0.128	0.265	0.101

AFDW ash free dry weight ID identification na not available

^a Chironomus weight is calculated as the total AFDW for each replicate divided by the number of surviving larvae

^b Chironomus biomass is calculated as the total AFDW for each replicate divided by the initial number of organisms introduced into the test chamber minus the number of organisms that emerged/pupated during the test.

^c Hyalella weight is the total weight for each replicate divided by the number of survivors.

^d Hyalella biomass is the total weight divided by the initial number of organisms introduced into the test chamber.

^e Weight and biomass data are not available because only one replicate has survivors and the weigh pan for that replicate was dropped before it could be weighed.

^f Weight data cannot be calculated because there were no survivors.

^g Standard deviation cannot be calculated because only one replicate had survivors.

2012 Sediment Toxicity Test Reference Data for the LPRSA

Appendix C



Table C-3. Interstitial Water Quality Measurements

Location ID	Laboratory Sample ID	Laboratory Measured Interstitial Water Quality ^a						
		Salinity (ppt)	pH	Alkalinity (mg/L)	Hardness (mg/L)	Total Ammonia (mg/L)	Unionized Ammonia ^b (mg/L)	DOC (mg/L)
UPRT18H	22800-002	0.3	6.54	54	350	1.6	0.002	8.8
UPRT18I	22800-001	na	na	na	na	na	na	na
UPRT18J	22800-003	na	na	na	na	na	na	na
UPRT18K	22800-004	na	na	na	na	na	na	na
UPRT19J	22800-005	0.5	6.46	na	na	3.5	0.004	na
UPRT19K	22800-006	na	na	na	na	na	na	na
UPRT19L	22800-007	na	na	na	na	na	na	na
UPRT19M	22800-008	na	na	na	na	na	na	na
UPRT20A	22800-009	0.5	6.74	na	na	1.5	0.003	21.0
UPRT20B	22800-010	0.4	6.84	na	na	1.0	0.003	na
UPRT20C	22800-011	0.4	6.83	230	360	10	0.027	10.0
UPRT20D	22800-012	0.4	6.80	150	240	5.8	0.014	7.9
UPRT20E	22800-013	na	na	na	na	na	na	na
UPRT20F	22800-014	0.5	6.07	28	780	12	0.006	18.0
UPRT20G	22800-015	0.4	7.04	130	na	na	na	na
UPRT21A	22800-016	na	na	na	na	na	na	na
UPRT21B	22800-017	0.6	6.80	460	290	38	0.095	42
UPRT21C	22800-018	0.5	7.19	220	300	1.2	0.007	47
UPRT21D	22800-019	na	na	na	na	na	na	na
UPRT21E	22800-020	na	na	na	na	na	na	na
UPRT21F	22800-021	0.4	6.83	170	220	4.6	0.012	9.5
UPRT21G	22800-022	na	na	na	na	na	na	na
UPRT22A	22800-023	na	na	na	na	na	na	na
UPRT22B	22800-024	na	na	na	na	na	na	na

DOC dissolved organic carbon ID identification ppt parts per thousand

na not available; data were not collected because the sample was coarse and insufficient volume of porewater was available to conduct the analysis.

^a Interstitial water quality measured by EnviroSystems, Hampton, NH.

^b Unionized ammonia was calculated from total ammonia, temperature, and pH data.

APPENDIX D. LABORATORY REPORTS

**TOXICOLOGICAL EVALUATION
OF SEDIMENT SAMPLES:**

**in support of the Ecological Risk Assessment for
Lower Passaic River Remedial Investigation
Purchase Order Number 2012-0042**

**28 Day *Hyalella azteca*
Survival and Growth Sediment Toxicity Test**

Prepared For:

Windward Environmental LLC
200 West Mercer Street, Suite 401
Seattle, Washington 98119-3958

Prepared By:

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Hampton, New Hampshire 03842

January 2013
Reference Number 22801

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**TOXICOLOGICAL EVALUATION
OF SEDIMENT SAMPLES:
in support of the Ecological Risk Assessment for
Lower Passaic River Remedial Investigation
Purchase Order Number 2012-0042**

28 Day *Hyalella azteca*
Survival and Growth Sediment Toxicity Test

1.0 INTRODUCTION

This report presents the results of the 28 day toxicity test conducted on sediment samples collected for the Lower Passaic River Remedial Investigation. Testing was based on programs and protocols developed by the ASTM (2012) and US EPA (2000). The toxicity of the samples was assessed by conducting survival and growth tests using the amphipod, *Hyalella azteca*. Toxicity tests and supporting analyses were performed at EnviroSystems, Incorporated (ESI), Hampton, New Hampshire.

Toxicity tests expose groups of organisms to environmental samples, a laboratory control and field reference site samples for a specified period to assess potential impacts on a variety of endpoints, such as survival, growth or reproduction. Analysis of variance techniques are used to determine the relative toxicity of the samples as compared to the laboratory control and/or field reference site samples. Endpoints for this 28 day study included survival and growth (measured as dry weight and dry biomass).

2.0 MATERIALS AND METHODS

2.1 General Methods, Biological Evaluations

Toxicological and analytical protocols used in this program follow procedures outlined in *Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Freshwater Invertebrates* (ASTM Method E 1706-05, 2012), *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates* (US EPA 2000) and *Standard Methods for the Examination of Water and Wastewater*, 20th Edition (APHA 2012). These protocols provide standard approaches for physical and chemical analysis and for the evaluation of toxicological effects of sediments on aquatic invertebrates.

2.2 Test Species

H. azteca were obtained from Aquatic Research Organisms (ARO), Hampton, New Hampshire. Organisms used in the 28 day exposure assay were 6 days old at the start of the assay.

2.3 Test Samples and Laboratory Control Sediment

Sediment samples for toxicological analysis were provided by Windward Environmental LLC, Seattle, Washington. Samples were received under chain of custody in Teflon® lined HDPE buckets. Upon arrival at the laboratory, all samples received an internal sample control number and were logged into the project sample control system. Samples were placed in a secure refrigerator and stored at a temperature of 2-4°C. After sample receipt, sediment pore water was collected and analyzed for salinity, pH, alkalinity, hardness, total ammonia, unionized ammonia and dissolved organic carbon. This data is summarized in the Data Appendix. Once sample containers were opened, the headspace in containers with remaining sample was purged using nitrogen gas to maintain sample integrity prior to return to storage. Sample identification, collection and receipt information is summarized in Table 1.

The control substrate was an artificial sediment prepared according to guidance presented in the EPA/ASTM method. Organic detritus from Chironomid cultures and disintegrated unbleached brown paper towel pulp were used to provide organic content (EPA 2000, ASTM 2012). Overlying water for the sediment toxicity tests was a 50:50 mixture of natural surface water, collected from the upper portion of the Taylor River watershed in Hampton Falls, New Hampshire, and moderately hard reconstituted water. Use of natural surface water mixed with artificial reconstituted water is recommended by the protocol (US EPA 2000, ASTM 2012).

2.4 *Hyalella azteca* Survival and Growth Toxicity Tests

The purpose of this test is to determine the impact, based on survival and growth, of sediments to amphipods exposed under static renewal conditions. The following details the exposure conditions.

A representative aliquot of sediment was taken from the sample container and then placed into the test chambers. Overlying water was added immediately and then the chambers were allowed to stabilize. The chambers received two volume additions daily until organisms were added. An aliquot of sediment was also submitted for total volatile solids analysis to estimate the organic content of each sample.

Test vessels were 400 mL glass beakers containing 100 mL of sediment and approximately 225 mL of overlying water. Test vessels were drilled at a consistent height above their bases and the hole covered with Nytex® screen. The screened hole facilitates water exchange while retaining test organisms. Vessels were maintained in a water bath during the test. Depth of the water in the bath was set below the drain hole in the test vessel to eliminate flow of water from the bath into the test vessel. Test chambers were randomly placed in the water bath after addition of test sediments. Placement locations were generated by the CETIS® software program. The block randomized position assignments are included in the data appendix. The water bath was maintained in a limited access, temperature controlled room. Temperatures in the room and water bath were independently set at a temperature of 23°C. Temperature was recorded on an hourly frequency using a temperature logger placed in a surrogate vessel. The photoperiod in the test chamber was set at 16:8 hour light:dark. Lighting was supplied by cool white fluorescent bulbs.

On day 0, amphipods were randomly selected from the pool of test organisms and added to test vessels. Each treatment group included 8 replicates with 10 organisms per replicate and a surrogate test chamber that was used to obtain water qualities during the assay without disturbing the test animals. The surrogate chamber was treated the same as actual test chambers with the addition of sediment, animals and food, but was not used to determine endpoint data.

Prior to the daily overlying water renewal, dissolved oxygen, pH, salinity, specific conductance and temperature were measured in the surrogate chamber for each treatment. Overlying water in each replicate was then renewed with approximately two volume additions. Water exchanges were facilitated by use of a distribution system designed to provide equal, regulated flow to each chamber. The system was activated manually by the addition of water during the assay. After overlying water renewal each replicate was fed 1.0 mL of a yeast/trout chow/alfalfa suspension (prepared at ESI). Alkalinity, ammonia and hardness of the overlying water were measured on days 0, 7, 14, 22 and 28. The total organic carbon of the overlying water and the ammonia of the pore water were measured on days 0 and 28. Water quality records are presented in Appendix A.

After 28 days exposure, replicates of each test treatment were terminated to collect data for the survival and growth endpoints. Each test chamber was gently swirled to loosen the sediments and the test material was emptied into a stainless steel sieve. The sediments were washed through the sieve using fresh water and material left on the screen was sorted to recover the organisms. This process was continued until the entire sample was evaluated. Surviving amphipods were placed on tared weighing pans. Pans were dried overnight at 104°C to obtain dry weight to the nearest 0.01 mg. Duplicate measurements of pan weights were taken at an approximate frequency of 5%. The mean dry weight of surviving organisms was determined to assess growth.

2.5 Statistical Analysis

Survival and growth were analyzed using CETIS® software to determine significant differences between the test sediments and the laboratory control sample. Data sets were evaluated to determine normality of distribution and homogeneity of sample variance. Data sets were subsequently evaluated using the appropriate parametric or non-parametric Analysis of Variance (ANOVA) statistic. Data sets were also analyzed for the presence of outliers using the Grubbs' Outlier Test. In cases where outliers were found, statistical analysis was conducted both with and without the questionable data point and both sets of results are reported. Statistical comparisons were made for the following endpoints; day 28 survival, dry weight and dry biomass. Dry weight was calculated by taking the mean dry weight obtained for a replicate and dividing it by the number of surviving organisms. Dry biomass was calculated by taking the mean dry weight obtained for a replicate and dividing it by the number of organisms exposed at the start of the assay. Pair-wise

comparisons were made using the appropriate statistical evaluation. Statistical difference was evaluated at $\alpha=0.05$.

2.6 Quality Control

As part of the laboratory quality control program, reference toxicant evaluations are conducted by ESI on a regular basis for each test species. These results provide relative health and response data while allowing for comparison with historic data sets. Results are summarized in Table 2.

3.0 RESULTS AND DISCUSSION

3.1 Laboratory Control Performance

At the end of the 28 day exposure period, mean survival in laboratory control sediment was 90% with a coefficient of variation (CV) of 11.88%. Amphipods recovered from laboratory control sediment had a mean dry weight of 0.625 mg/amphipod, with a CV of 17.33%. The dry weight of a representative group of amphipods at the start of the assay was 0.015 mg/individual. The minimum test acceptability criteria for survival in the laboratory control is $\geq 80\%$. The minimum acceptable criteria for growth is a demonstration of increased dry weight after 28 days exposure. Table 3 provides a summary of assay acceptability criteria and laboratory control achievement.

3.2 Protocol Deviations

Review of data generated during the 28-day exposure period documented the following protocol deviations.

During daily water quality observations the temperature recorded for the assay had a mean value of 22.51°C with a range of 17.95 to 24.41°C. Confirmation temperature data collected in a surrogate replicate documented a mean temperature of 22.4°C with a range of 18.8 to 24.8°C. Test acceptability criteria requires a mean temperature of $23\pm 1^{\circ}\text{C}$, with maximum temporary fluctuations of $23\pm 3^{\circ}\text{C}$. The temperatures fell below the bounds set by the protocol on Days 1-3 (12/08/12-12/10/12) for a total of 44 hours. Temperatures were also low on Day 27 (01/03/13) for a total of 11 hours. According to the ASTM (2012):

"Temperatures tolerated by *H. azteca* range from 0 to 33°C. At temperatures $<10^{\circ}\text{C}$ the organisms rest and are immobile. At temperatures of 10 to 18°C, reproduction can occur. Juveniles grow more slowly at colder temperatures and become larger adults. Smaller adults with higher reproduction are typical when organisms are grown at 18 to 28°C. The highest rates of reproduction occur at 26 to 28°C while lethality occurs at 33 to 37°C."

Temperatures during the assay were well within the normal range where average growth and reproduction has been demonstrated. Also according to the EPA manual (2000),

"In general, the performance of test organisms in the negative control is used to judge the acceptability of a test ..."

The laboratory control for this assay had a mean survival of 90%, which exceeded the assay minimum of 80%. The mean dry weight of 0.625 mg/amphipod was within 1 standard deviation of the historic mean for this type of assay. (Last 34 tests day 28 dry weight mean was 0.714 mg/amphipod with a 1 standard deviation range of 0.469 - 0.959 mg/amphipod.)

It is the opinion of ESI's study director that this deviation did not adversely affect the outcome of the assay. The temperature was still within a normal range for the organisms and the laboratory control performed well, which is clearly demonstrated by the above data.

3.3 Summary

This program utilized protocols developed by the US EPA and ASTM to assess potential toxicological impacts on aquatic invertebrates. Table 4 provides a summary of demonstrated effects, based on comparison with the laboratory control. Tables 5 through 7 provide summaries of assay endpoints and detailed statistical results for each sample location. Table 8 summarizes water qualities measured during the test. Laboratory bench sheets, water quality data, detailed summaries of survival, dry weights and associated statistical support data are included in Appendix A.

4.0 REFERENCES

- APHA. 2012. *Standard Methods for the Examination of Water and Wastewater*, 22nd Edition. Washington D.C.
- ASTM. 2012. Annual Book of ASTM Standards. Volume 11.06. *Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Freshwater Invertebrates*. E 1706-05. ASTM, West Conshohocken, PA.
- US EPA. 2000. *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates*. Second Edition. EPA/600-R-99/064.

Table 1. Summary of Sample Collection and Receipt Information. *H. azteca* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22801. January 2013.

Field ID	ESI Code	Sample Number	Sample Collected Date	Time	Sample Received Date	Time
UPRT18I	22800-001	001	11/12/12	1013	11/17/12	1305
UPRT18H	22800-002	002	11/12/12	1217	11/17/12	1305
UPRT18J	22800-003	003	11/12/12	1321	11/17/12	1305
UPRT18K	22800-004	004	11/12/12	1437	11/17/12	1305
UPRT19J	22800-005	005	11/13/12	0820	11/17/12	1305
UPRT19K	22800-006	006	11/13/12	0946	11/17/12	1305
UPRT19L	22800-007	007	11/13/12	1055	11/17/12	1305
UPRT19M	22800-008	008	11/13/12	1159	11/17/12	1305
UPRT20A	22800-009	009	11/13/12	1330	11/17/12	1305
UPRT20B	22800-010	010	11/13/12	1441	11/17/12	1305
UPRT20C	22800-011	011	11/14/12	0815	11/17/12	1305
UPRT20D	22800-012	012	11/14/12	0914	11/17/12	1305
UPRT20E	22800-013	013	11/14/12	1112	11/17/12	1305
UPRT20F	22800-014	014	11/14/12	1149	11/17/12	1305
UPRT20G	22800-015	015	11/14/12	1252	11/17/12	1305
UPRT21A	22800-016	016	11/14/12	1352	11/17/12	1305
UPRT21B	22800-017	017	11/15/12	0819	11/17/12	1305
UPRT21C	22800-018	018	11/15/12	0917	11/17/12	1305
UPRT21D	22800-019	019	11/15/12	1008	11/17/12	1305
UPRT21E	22800-020	020	11/15/12	1052	11/17/12	1305
UPRT21F	22800-021	021	11/15/12	1129	11/17/12	1305
UPRT21G	22800-022	022	11/15/12	1225	11/17/12	1305
UPRT22A	22800-023	023	11/16/12	0806	11/17/12	1305
UPRT22B	22800-024	024	11/16/12	0909	11/17/12	1305

Table 2. Reference Toxicant Evaluation. *H. azteca* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22801. January 2013.

Date	Endpoint	Value	Historic Mean/Central Tendency	Acceptable Range	Reference Toxicant
<i>Hyalella azteca</i>					
12/13/12	Survival	LC-50	0.015	0.000 - 0.033	Cadmium (mg/L)

Table 3. Summary of Acceptable Endpoints and Measurements. *H. azteca* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22801. January 2013.

Endpoint / Measurement	Protocol Criteria		
Survival	lab mean \geq 80%	Mean Survival % Protocol Met	90% Yes
Growth	Measured Growth	start dry wt. (mg) end dry wt. (mg)	0.015 0.625
		Protocol Met	Yes
Temperature	Mean: $23^{\circ}\pm1^{\circ}\text{C}$ Minimum: 20°C Maximum: 26°C	daily / hourly daily / hourly daily / hourly	22.51 / 22.4 17.95 / 18.8 24.41 / 24.8
		Protocol Met	No* / No*

Note: * For a discussion of the temperature deviation please see section 3.2 Protocol Deviations.

Table 4. Summary of Statistically Significant Endpoints. *H. azteca* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22801. January 2013.

Finding of Significant Difference(s) between Project Sites and Laboratory Control					
Field ID	ESI Code	Sample Number	survival	ash free dry weight	ash free dry biomass
UPRT18I	22800-001	001	No	Yes	Yes
UPRT18H	22800-002	002	No	Yes	Yes
UPRT18J	22800-003	003	No	Yes	Yes
UPRT18K	22800-004	004	Yes	Yes	Yes
UPRT19J	22800-005	005	Yes	-	-
UPRT19K	22800-006	006	No	Yes	Yes
UPRT19L	22800-007	007	Yes	Yes	Yes
UPRT19M	22800-008	008	Yes	Yes	Yes
UPRT20A	22800-009	009	Yes	Yes	Yes
UPRT20B	22800-010	010	No	Yes	Yes
UPRT20C	22800-011	011	No	Yes	Yes
UPRT20D	22800-012	012	No	Yes	Yes
UPRT20E	22800-013	013	Yes	Yes	Yes
UPRT20F	22800-014	014	Yes	Yes	Yes
UPRT20G	22800-015	015	Yes	Yes	Yes
UPRT21A	22800-016	016	Yes	Yes	Yes
UPRT21B	22800-017	017	Yes	Yes	Yes
UPRT21C	22800-018	018	Yes	Yes	Yes
UPRT21D	22800-019	019	Yes	Yes	Yes
UPRT21E	22800-020	020	Yes	Yes	Yes
UPRT21F	22800-021	021	Yes	Yes	Yes
UPRT21G	22800-022	022	Yes	Yes	Yes
UPRT22A	22800-023	023	Yes	Yes	Yes
UPRT22B	22800-024	024	Yes	Yes	Yes

Note: “-“ Indicates that the sample could not be evaluated for the selected endpoint.

Table 5. Day 28 Survival Summary and Statistical Analysis. *H. azteca* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22801. January 2013.

Survival Summary

Field ID	ESI Code	Sample Number	Reps	Mean	Minimum	Maximum	CV	Significant
Lab Control	22800-000	000	8	90.00%	70%	100%	11.88%	-
UPRT18I	22800-001	001	8	72.50%	20%	100%	35.93%	No
UPRT18H	22800-002	002	8	85.00%	60%	100%	15.40%	No
UPRT18J	22800-003	003	8	90.00%	80%	100%	5.94%	No
UPRT18K	22800-004	004	8	75.00%	60%	100%	20.16%	Yes
UPRT19J	22800-005	005	8	0.00%	0%	0%	0.00%	Yes
UPRT19K	22800-006	006	8	88.75%	80%	100%	11.17%	No
UPRT19L	22800-007	007	8	65.00%	30%	90%	32.89%	Yes
UPRT19M	22800-008	008	8	43.75%	10%	70%	51.75%	Yes
UPRT20A	22800-009	009	8	60.00%	0%	90%	50.40%	Yes
UPRT20B	22800-010	010	8	75.00%	10%	100%	37.71%	No / No
UPRT20C	22800-011	011	7	75.71%	40%	100%	28.39%	No
UPRT20D	22800-012	012	8	73.75%	30%	100%	38.99%	No
UPRT20E	22800-013	013	8	66.25%	40%	80%	21.25%	Yes
UPRT20F	22800-014	014	8	1.25%	0%	10%	282.80%	Yes
UPRT20G	22800-015	015	8	67.50%	50%	90%	22.05%	Yes
UPRT21A	22800-016	016	8	68.75%	40%	90%	26.29%	Yes
UPRT21B	22800-017	017	8	18.75%	0%	60%	100.50%	Yes
UPRT21C	22800-018	018	8	77.50%	70%	90%	9.12%	Yes
UPRT21D	22800-019	019	8	62.50%	10%	90%	40.79%	Yes / Yes
UPRT21E	22800-020	020	8	57.50%	10%	80%	38.05%	Yes / Yes
UPRT21F	22800-021	021	8	72.50%	50%	100%	23.02%	Yes
UPRT21G	22800-022	022	8	62.50%	10%	80%	44.23%	Yes
UPRT22A	22800-023	023	8	80.00%	60%	100%	14.94%	Yes
UPRT22B	22800-024	024	8	58.75%	20%	90%	34.57%	Yes

Note: “No / No” Indicates that an outlier was detected and the result of the statistical analysis was not changed when the outlier was excluded.

“Yes / Yes” Indicates that an outlier was detected and the result of the statistical analysis was not changed when the outlier was excluded.

Table 6. Day 28 Dry Weight Summary and Statistical Analysis. *H. azteca* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22801. January 2013.

Dry Weight Summary

Field ID	ESI Code	Sample Number	Reps	Mean	Minimum	Maximum	CV	Significant
Lab Control	22800-000	000	8	0.625	0.480	0.728	17.33%	-
UPRT18I	22800-001	001	8	0.253	0.185	0.360	25.56%	Yes
UPRT18H	22800-002	002	8	0.311	0.208	0.419	23.46%	Yes
UPRT18J	22800-003	003	8	0.334	0.256	0.448	18.69%	Yes
UPRT18K	22800-004	004	8	0.376	0.266	0.517	22.85%	Yes
UPRT19J	22800-005	005	NS	-	-	-	-	-
UPRT19K	22800-006	006	8	0.385	0.285	0.475	16.00%	Yes
UPRT19L	22800-007	007	8	0.341	0.117	0.567	39.16%	Yes
UPRT19M	22800-008	008	8	0.345	0.304	0.395	9.15%	Yes
UPRT20A	22800-009	009	7	0.252	0.113	0.308	28.63%	Yes
UPRT20B	22800-010	010	8	0.351	0.210	0.590	34.59%	Yes
UPRT20C	22800-011	011	7	0.394	0.208	0.551	29.08%	Yes
UPRT20D	22800-012	012	8	0.318	0.100	0.507	38.56%	Yes
UPRT20E	22800-013	013	8	0.337	0.157	0.502	33.81%	Yes
UPRT20F	22800-014	014	1	0.070	0.070	0.070	0.00%	Yes
UPRT20G	22800-015	015	8	0.292	0.156	0.521	43.50%	Yes
UPRT21A	22800-016	016	8	0.321	0.249	0.527	27.45%	Yes
UPRT21B	22800-017	017	7	0.201	0.090	0.423	61.62%	Yes
UPRT21C	22800-018	018	8	0.354	0.293	0.417	13.78%	Yes
UPRT21D	22800-019	019	8	0.275	0.146	0.503	40.96%	Yes
UPRT21E	22800-020	020	8	0.269	0.190	0.431	37.64%	Yes
UPRT21F	22800-021	021	8	0.343	0.249	0.453	20.93%	Yes
UPRT21G	22800-022	022	8	0.531	0.288	1.650	85.78%	Yes / Yes
UPRT22A	22800-023	023	8	0.355	0.276	0.475	20.64%	Yes
UPRT22B	22800-024	024	8	0.458	0.323	0.702	27.94%	Yes

Note: "NS" Indicates that there were no survivors.

"Yes / Yes" Indicates that an outlier was detected and the result of the statistical analysis was not changed when the outlier was excluded.

Table 7. Day 28 Dry Biomass Summary and Statistical Analysis. *H. azteca* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22801. January 2013.

Dry Biomass Summary								
Field ID	ESI Code	Sample Number	Reps	Mean	Minimum	Maximum	CV	Significant
Lab Control	22800-000	000	8	0.560	0.402	0.726	19.21%	-
UPRT18I	22800-001	001	8	0.177	0.072	0.292	40.08%	Yes
UPRT18H	22800-002	002	8	0.264	0.166	0.362	27.42%	Yes
UPRT18J	22800-003	003	8	0.302	0.230	0.403	21.31%	Yes
UPRT18K	22800-004	004	8	0.279	0.184	0.364	24.77%	Yes
UPRT19J	22800-005	005	NS	-	-	-	-	-
UPRT19K	22800-006	006	8	0.346	0.228	0.475	26.09%	Yes
UPRT19L	22800-007	007	8	0.232	0.035	0.510	56.53%	Yes
UPRT19M	22800-008	008	8	0.148	0.036	0.239	49.86%	Yes
UPRT20A	22800-009	009	7	0.167	0.102	0.277	35.80%	Yes
UPRT20B	22800-010	010	8	0.243	0.059	0.410	44.58%	Yes
UPRT20C	22800-011	011	7	0.306	0.125	0.473	44.17%	Yes
UPRT20D	22800-012	012	8	0.242	0.030	0.372	50.04%	Yes
UPRT20E	22800-013	013	8	0.226	0.094	0.367	40.82%	Yes
UPRT20F	22800-014	014	1	0.007	0.007	0.007	0.00%	Yes
UPRT20G	22800-015	015	8	0.199	0.078	0.417	52.62%	Yes
UPRT21A	22800-016	016	8	0.218	0.109	0.316	30.44%	Yes
UPRT21B	22800-017	017	7	0.056	0.009	0.184	126.20%	Yes
UPRT21C	22800-018	018	8	0.273	0.227	0.327	12.29%	Yes
UPRT21D	22800-019	019	8	0.176	0.021	0.334	58.63%	Yes
UPRT21E	22800-020	020	8	0.159	0.019	0.345	57.90%	Yes
UPRT21F	22800-021	021	8	0.254	0.128	0.389	35.87%	Yes
UPRT21G	22800-022	022	8	0.253	0.100	0.386	38.35%	Yes
UPRT22A	22800-023	023	8	0.290	0.168	0.475	34.38%	Yes
UPRT22B	22800-024	024	8	0.265	0.088	0.388	38.23%	Yes

Note: "NS" Indicates that there were no survivors.

Table 8. Summary of Water Qualities. *H. azteca* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22801. January 2013.

ESI Code	Field ID	Sample Number	Day	Overlying Water				Pore Water Ammonia (mg/L)
				Conductance (µS/cm)	Alkalinity (mg/L)	Hardness (mg/L)	Ammonia (mg/L)	
22800-000	Lab Control	000	0	338	64	95	<0.1	<0.5
22800-001	UPRT18I	001	0	341	45	94	<0.1	1.2
22800-002	UPRT18H	002	0	327	50	89	0.36	1.8
22800-003	UPRT18J	003	0	334	47	90	0.7	3.2
22800-004	UPRT18K	004	0	328	50	88	<0.1	0.97
22800-005	UPRT19J	005	0	333	43	88	0.46	3.9
22800-006	UPRT19K	006	0	340	54	90	0.34	4
22800-007	UPRT19L	007	0	340	52	93	<0.1	1.9
22800-008	UPRT19M	008	0	335	48	92	0.13	0.55
22800-009	UPRT20A	009	0	341	61	96	0.29	7.9
22800-010	UPRT20B	010	0	354	71	99	<0.1	2.8
22800-011	UPRT20C	011	0	359	64	92	2.8	10
22800-012	UPRT20D	012	0	345	53	83	2.2	7.2
22800-013	UPRT20E	013	0	352	51	120	<0.1	18
22800-014	UPRT20F	014	0	351	43	91	2.6	14
22800-015	UPRT20G	015	0	340	60	88	0.96	7.1
22800-016	UPRT21A	016	0	357	59	98	0.34	1.8
22800-017	UPRT21B	017	0	442	100	100	9.2	30
22800-018	UPRT21C	018	0	354	70	97	0.82	4.8
22800-019	UPRT21D	019	0	351	75	110	0.29	4.4
22800-020	UPRT21E	020	0	367	60	110	<0.1	0.96
22800-021	UPRT21F	021	0	376	73	96	1.8	9.4
22800-022	UPRT21G	022	0	337	52	100	<0.1	0.76
22800-023	UPRT22A	023	0	333	56	89	<0.1	<0.5
22800-024	UPRT22B	024	0	353	77	110	<0.1	<0.5
22800-000	Lab Control	000	7	335	62	86	<0.1	-
22800-001	UPRT18I	001	7	330	54	86	<0.1	-
22800-002	UPRT18H	002	7	325	57	80	<0.1	-
22800-003	UPRT18J	003	7	333	52	92	<0.1	-
22800-004	UPRT18K	004	7	330	56	84	<0.1	-
22800-005	UPRT19J	005	7	333	53	76	0.41	-
22800-006	UPRT19K	006	7	324	54	77	<0.1	-
22800-007	UPRT19L	007	7	320	54	81	<0.1	-
22800-008	UPRT19M	008	7	313	49	77	<0.1	-
22800-009	UPRT20A	009	7	325	58	85	<0.1	-
22800-010	UPRT20B	010	7	320	59	81	<0.1	-
22800-011	UPRT20C	011	7	317	61	82	<0.1	-
22800-012	UPRT20D	012	7	302	44	68	<0.1	-
22800-013	UPRT20E	013	7	316	53	82	<0.1	-
22800-014	UPRT20F	014	7	319	51	79	0.13	-
22800-015	UPRT20G	015	7	317	56	85	<0.1	-
22800-016	UPRT21A	016	7	321	55	81	<0.1	-
22800-017	UPRT21B	017	7	338	74	88	2.1	-
22800-018	UPRT21C	018	7	338	65	89	<0.1	-
22800-019	UPRT21D	019	7	323	58	87	0.12	-
22800-020	UPRT21E	020	7	327	58	90	<0.1	-
22800-021	UPRT21F	021	7	330	62	91	0.17	-
22800-022	UPRT21G	022	7	317	54	83	<0.1	-
22800-023	UPRT22A	023	7	323	55	91	<0.1	-
22800-024	UPRT22B	024	7	328	59	85	<0.1	-

ESI Code	Field ID	Sample Number	Day	Overlying Water				Pore Water Ammonia (mg/L)
				Conductance (µS/cm)	Alkalinity (mg/L)	Hardness (mg/L)	Ammonia (mg/L)	
22800-000	Lab Control	000	14	336	66	94	<0.1	-
22800-001	UPRT18I	001	14	336	56	91	<0.1	-
22800-002	UPRT18H	002	14	344	64	97	<0.1	-
22800-003	UPRT18J	003	14	339	59	94	<0.1	-
22800-004	UPRT18K	004	14	332	55	90	<0.1	-
22800-005	UPRT19J	005	14	339	52	90	<0.1	-
22800-006	UPRT19K	006	14	332	57	91	<0.1	-
22800-007	UPRT19L	007	14	326	56	88	<0.1	-
22800-008	UPRT19M	008	14	326	52	87	<0.1	-
22800-009	UPRT20A	009	14	347	67	100	<0.1	-
22800-010	UPRT20B	010	14	353	76	110	<0.1	-
22800-011	UPRT20C	011	14	367	85	110	<0.1	-
22800-012	UPRT20D	012	14	327	56	87	<0.1	-
22800-013	UPRT20E	013	14	323	54	88	<0.1	-
22800-014	UPRT20F	014	14	341	66	96	<0.1	-
22800-015	UPRT20G	015	14	336	64	94	<0.1	-
22800-016	UPRT21A	016	14	332	58	91	<0.1	-
22800-017	UPRT21B	017	14	329	62	91	<0.1	-
22800-018	UPRT21C	018	14	357	74	100	<0.1	-
22800-019	UPRT21D	019	14	322	57	87	<0.1	-
22800-020	UPRT21E	020	14	325	59	89	<0.1	-
22800-021	UPRT21F	021	14	348	71	100	<0.1	-
22800-022	UPRT21G	022	14	317	55	86	<0.1	-
22800-023	UPRT22A	023	14	326	56	88	<0.1	-
22800-024	UPRT22B	024	14	323	57	88	<0.1	-
22800-000	Lab Control	000	21	358	58	89	<0.1	-
22800-001	UPRT18I	001	21	329	54	87	<0.1	-
22800-002	UPRT18H	002	21	331	54	89	<0.1	-
22800-003	UPRT18J	003	21	330	53	88	<0.1	-
22800-004	UPRT18K	004	21	318	42	78	<0.1	-
22800-005	UPRT19J	005	21	345	59	94	<0.1	-
22800-006	UPRT19K	006	21	330	55	89	<0.1	-
22800-007	UPRT19L	007	21	327	55	87	<0.1	-
22800-008	UPRT19M	008	21	329	55	87	<0.1	-
22800-009	UPRT20A	009	21	335	57	91	<0.1	-
22800-010	UPRT20B	010	21	324	54	87	<0.1	-
22800-011	UPRT20C	011	21	343	65	99	<0.1	-
22800-012	UPRT20D	012	21	337	61	93	<0.1	-
22800-013	UPRT20E	013	21	326	56	91	<0.1	-
22800-014	UPRT20F	014	21	339	58	94	<0.1	-
22800-015	UPRT20G	015	21	321	53	85	<0.1	-
22800-016	UPRT21A	016	21	327	57	89	<0.1	-
22800-017	UPRT21B	017	21	330	53	96	0.15	-
22800-018	UPRT21C	018	21	339	59	93	<0.1	-
22800-019	UPRT21D	019	21	323	55	87	<0.1	-
22800-020	UPRT21E	020	21	326	57	87	<0.1	-
22800-021	UPRT21F	021	21	313	50	82	<0.1	-
22800-022	UPRT21G	022	21	314	54	84	<0.1	-
22800-023	UPRT22A	023	21	322	55	85	<0.1	-
22800-024	UPRT22B	024	21	318	54	90	<0.1	-
22800-000	Lab Control	000	28	399	61	92	<0.1	<0.5
22800-001	UPRT18I	001	28	347	53	87	<0.1	1.1
22800-002	UPRT18H	002	28	342	54	88	<0.1	1

ESI Code	Field ID	Sample Number	Day	Overlying Water				Pore Water Ammonia (mg/L)
				Conductance (µS/cm)	Alkalinity (mg/L)	Hardness (mg/L)	Ammonia (mg/L)	
22800-003	UPRT18J	003	28	348	55	90	<0.1	1.5
22800-004	UPRT18K	004	28	348	54	89	<0.1	<0.5
22800-005	UPRT19J	005	28	382	69	110	<0.1	6.1
22800-006	UPRT19K	006	28	343	53	87	<0.1	1.6
22800-007	UPRT19L	007	28	349	56	88	<0.1	0.64
22800-008	UPRT19M	008	28	347	56	87	<0.1	<0.5
22800-009	UPRT20A	009	28	352	58	83	<0.1	4.1
22800-010	UPRT20B	010	28	338	55	87	<0.1	3
22800-011	UPRT20C	011	28	348	59	91	<0.1	9.6
22800-012	UPRT20D	012	28	359	60	95	<0.1	10
22800-013	UPRT20E	013	28	340	57	87	<0.1	<0.5
22800-014	UPRT20F	014	28	342	54	89	<0.1	8.1
22800-015	UPRT20G	015	28	332	52	84	<0.1	1.1
22800-016	UPRT21A	016	28	340	57	88	<0.1	<0.5
22800-017	UPRT21B	017	28	342	44	84	0.1	20
22800-018	UPRT21C	018	28	347	59	90	<0.1	4.8
22800-019	UPRT21D	019	28	333	55	85	<0.1	0.71
22800-020	UPRT21E	020	28	338	57	87	<0.1	<0.5
22800-021	UPRT21F	021	28	329	52	82	<0.1	7.6
22800-022	UPRT21G	022	28	327	54	82	<0.1	<0.5
22800-023	UPRT22A	023	28	336	56	86	<0.1	<0.5
22800-024	UPRT22B	024	28	333	56	84	<0.1	<0.5

Comments:

Additional water quality data are provided in Appendix A.

APPENDIX A: RAW DATA AND STATISTICAL SUPPORT

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Hyalella azteca 28 Day Sediment Assay

Study: 22801

Client: Windward Environmental, LLC

**Project: Lower Passaic River
Remedial Investigation**

Day	Date	Overlying Water Qualities Measured, Water Renewed and Chambers Fed		Renewal Water Specific Conductivity	Notes
		Check	Initial		
0	12/07/12	✓	AM/JTP ⁰	293	Aeration was added to test.
1	12/08/12	✓	JM	302	
2	12/09/12	✓	JM/ND	304	
3	12/10/12	✓	AM	305	
4	12/11/12	✓	AM/JTP	307	Power surge caused temp issues
5	12/12/12	✓	JTP/JM	300	
6	12/13/12	✓	AM/JTP	305	
7	12/14/12	✓	AM	302	
8	12/15/12	✓	JM	297	
9	12/16/12	✓	AM	310	Temp were low. Recirc flow increased.
10	12/17/12	✓	AM	317	
11	12/18/12	✓	AM/JTP	310	
12	12/19/12	✓	AM	300	
13	12/20/12	✓	AM	302	
14	12/21/12	✓	AM	303	
15	12/22/12	✓	JM	308	water qualities were missed on 19 + 10
16	12/23/12	✓	ND/JM	270	
17	12/24/12	✓	AM	301	
18	12/25/12	✓	AM/KC	299	
19	12/26/12	✓	AM	300	
20	12/27/12	✓	AM	318	
21	12/28/12	✓	AM	324	
22	12/29/12	✓	JM	309	
23	12/30/12	✓	JM/ND	301	
24	12/31/12	✓	JM/RAM	308	
25	01/01/13	✓	DM	306	
26	01/02/13	✓	JTP	316	
27	01/03/13	✓	JTP	313	Lab beaker #50 (Rep B) overflowed, cleared screen
28	01/04/13	—	AM	—	
Overlying Water and Renewal Water: Alkalinity, Hardness & Ammonia on Days 0, 7, 14, 21, 28 TOC on Days 0 and 28 Pore Water: Ammonia & pH on Days 0 & 28		Day 0	Initial: AM/JTP		
		Day 7	Initial: AM		
		Day 14	Initial: AM		
		Day 21	Initial: AM		
		Day 28	Initial: AM		
Notes: 23 °C		Feed 1 mL of YCT food mixture		Aerate if DO is below 2.5 mg/L	
				Two Volume Additions Daily	

* Temps were restored on 12/10/12

Sample Key

Client: Windward Environmental, LLC.
Project: Lower Passaic River Remedial Investigation
Study: 22801

LabID	Field ID	Sample Number	Sampled	Received		
22800-000	Lab Control	000				
22800-001	UPRT18I	001	11/12/12	1013	11/17/12	1305
22800-002	UPRT18H	002	11/12/12	1217	11/17/12	1305
22800-003	UPRT18J	003	11/12/12	1321	11/17/12	1305
22800-004	UPRT18K	004	11/12/12	1437	11/17/12	1305
22800-005	UPRT19J	005	11/13/12	820	11/17/12	1305
22800-006	UPRT19K	006	11/13/12	946	11/17/12	1305
22800-007	UPRT19L	007	11/13/12	1055	11/17/12	1305
22800-008	UPRT19M	008	11/13/12	1159	11/17/12	1305
22800-009	UPRT20A	009	11/13/12	1330	11/17/12	1305
22800-010	UPRT20B	010	11/13/12	1441	11/17/12	1305
22800-011	UPRT20C	011	11/14/12	815	11/17/12	1305
22800-012	UPRT20D	012	11/14/12	914	11/17/12	1305
22800-013	UPRT20E	013	11/14/12	1112	11/17/12	1305
22800-014	UPRT20F	014	11/14/12	1149	11/17/12	1305
22800-015	UPRT20G	015	11/14/12	1252	11/17/12	1305
22800-016	UPRT21A	016	11/14/12	1352	11/17/12	1305
22800-017	UPRT21B	017	11/15/12	819	11/17/12	1305
22800-018	UPRT21C	018	11/15/12	917	11/17/12	1305
22800-019	UPRT21D	019	11/15/12	1008	11/17/12	1305
22800-020	UPRT21E	020	11/15/12	1052	11/17/12	1305
22800-021	UPRT21F	021	11/15/12	1129	11/17/12	1305
22800-022	UPRT21G	022	11/15/12	1225	11/17/12	1305
22800-023	UPRT22A	023	11/16/12	806	11/17/12	1305
22800-024	UPRT22B	024	11/16/12	909	11/17/12	1305

Sample Randomization Key

Client: Windward Environmental, LLC.

Project: Lower Passaic River Remedial Investigation

Study: 22801

Sample	Rep	Position Assigned	
		In Assay	by CETIS
22800-000	1	20	18
22800-000	2	50	43
22800-000	3	52	71
22800-000	4	94	89
22800-000	5	125	117
22800-000	6	144	140
22800-000	7	171	158
22800-000	8	177	188
22800-001	1	22	25
22800-001	2	45	36
22800-001	3	62	52
22800-001	4	77	83
22800-001	5	118	105
22800-001	6	135	148
22800-001	7	175	166
22800-001	8	187	192
22800-002	1	8	10
22800-002	2	28	41
22800-002	3	57	72
22800-002	4	90	93
22800-002	5	111	120
22800-002	6	146	142
22800-002	7	160	162
22800-002	8	179	184
22800-003	1	23	7
22800-003	2	43	32
22800-003	3	53	61
22800-003	4	89	90
22800-003	5	124	113
22800-003	6	128	146
22800-003	7	165	165
22800-003	8	185	177
22800-004	1	24	13
22800-004	2	37	38
22800-004	3	55	75
22800-004	4	80	92
22800-004	5	119	111
22800-004	6	150	133
22800-004	7	168	159
22800-004	8	195	186
22800-005	1	13	6
22800-005	2	41	40
22800-005	3	61	64
22800-005	4	95	99
22800-005	5	121	106
22800-005	6	132	149
22800-005	7	173	151
22800-005	8	196	178
22800-006	1	11	12
22800-006	2	33	35
22800-006	3	74	53
22800-006	4	76	96
22800-006	5	120	109
22800-006	6	145	141
22800-006	7	167	170
22800-006	8	183	200
22800-007	1	1	4
22800-007	2	36	28
22800-007	3	69	51
22800-007	4	83	76
22800-007	5	113	122
22800-007	6	141	145
22800-007	7	172	172
22800-007	8	190	176

Sample	Rep	Position Assigned	
		In Assay	by CETIS
22800-008	1	19	17
22800-008	2	29	47
22800-008	3	56	60
22800-008	4	87	81
22800-008	5	122	108
22800-008	6	137	126
22800-008	7	161	175
22800-008	8	198	195
22800-009	1	5	22
22800-009	2	30	30
22800-009	3	70	63
22800-009	4	78	78
22800-009	5	107	107
22800-009	6	131	131
22800-009	7	174	174
22800-009	8	178	197
22800-010	1	21	21
22800-010	2	40	27
22800-010	3	58	74
22800-010	4	92	77
22800-010	5	105	118
22800-010	6	143	127
22800-010	7	152	168
22800-010	8	180	194
22800-011	1	10	3
22800-011	2	39	46
22800-011	3	64	65
22800-011	4	79	97
22800-011	5	123	110
22800-011	6	126	139
22800-011	7	156	164
22800-011	8	186	183
22800-012	1	25	14
22800-012	2	44	31
22800-012	3	72	62
22800-012	4	86	79
22800-012	5	115	123
22800-012	6	139	135
22800-012	7	153	152
22800-012	8	176	190
22800-013	1	7	23
22800-013	2	42	37
22800-013	3	75	57
22800-013	4	81	80
22800-013	5	110	116
22800-013	6	130	136
22800-013	7	154	155
22800-013	8	181	187
22800-014	1	4	11
22800-014	2	47	45
22800-014	3	71	69
22800-014	4	84	86
22800-014	5	101	102
22800-014	6	133	137
22800-014	7	162	169
22800-014	8	199	181
22800-015	1	2	8
22800-015	2	49	34
22800-015	3	63	54
22800-015	4	99	100
22800-015	5	102	124
22800-015	6	140	134
22800-015	7	164	157
22800-015	8	194	199
22800-016	1	3	9
22800-016	2	46	49
22800-016	3	54	56
22800-016	4	100	98
22800-016	5	108	125
22800-016	6	127	130

Sample	Rep	Position Assigned	
		In Assay	by CETIS
22800-016	7	169	167
22800-016	8	192	180
22800-017	1	12	15
22800-017	2	26	42
22800-017	3	60	59
22800-017	4	85	85
22800-017	5	103	115
22800-017	6	149	132
22800-017	7	163	173
22800-017	8	184	182
22800-018	1	6	24
22800-018	2	48	48
22800-018	3	67	66
22800-018	4	97	95
22800-018	5	117	119
22800-018	6	136	128
22800-018	7	170	154
22800-018	8	193	185
22800-019	1	14	5
22800-019	2	27	33
22800-019	3	59	70
22800-019	4	88	87
22800-019	5	109	112
22800-019	6	147	138
22800-019	7	166	161
22800-019	8	188	189
22800-020	1	16	19
22800-020	2	35	39
22800-020	3	66	55
22800-020	4	98	82
22800-020	5	116	104
22800-020	6	148	147
22800-020	7	155	171
22800-020	8	189	191
22800-021	1	18	1
22800-021	2	32	44
22800-021	3	68	68
22800-021	4	96	88
22800-021	5	114	114
22800-021	6	134	144
22800-021	7	158	156
22800-021	8	200	193
22800-022	1	17	16
22800-022	2	34	26
22800-022	3	51	67
22800-022	4	91	84
22800-022	5	104	103
22800-022	6	129	150
22800-022	7	151	163
22800-022	8	191	196
22800-023	1	15	2
22800-023	2	31	29
22800-023	3	73	58
22800-023	4	93	94
22800-023	5	112	101
22800-023	6	142	129
22800-023	7	159	153
22800-023	8	182	198
22800-024	1	9	20
22800-024	2	38	50
22800-024	3	65	73
22800-024	4	82	91
22800-024	5	106	121
22800-024	6	138	143
22800-024	7	157	160
22800-024	8	197	179

YSI 556 MPS Sample Reading Order

Study: 22801

Client: Windward Environmental, LLC

Project: Lower Passaic River Remedial Investigation

Reading Number	Field ID	Receipt Number	Sample Number
0	Lab Control	22800-000	000
1	UPRT18I	22800-001	001
2	UPRT18H	22800-002	002
3	UPRT18J	22800-003	003
4	UPRT18K	22800-004	004
5	UPRT19J	22800-005	005
6	UPRT19K	22800-006	006
7	UPRT19L	22800-007	007
8	UPRT19M	22800-008	008
9	UPRT20A	22800-009	009
10	UPRT20B	22800-010	010
11	UPRT20C	22800-011	011
12	UPRT20D	22800-012	012
13	UPRT20E	22800-013	013
14	UPRT20F	22800-014	014
15	UPRT20G	22800-015	015
16	UPRT21A	22800-016	016
17	UPRT21B	22800-017	017
18	UPRT21C	22800-018	018
19	UPRT21D	22800-019	019
20	UPRT21E	22800-020	020
21	UPRT21F	22800-021	021
22	UPRT21G	22800-022	022
23	UPRT22A	22800-023	023
24	UPRT22B	22800-024	024

STUDY: 22801
CLIENT: Windward Environmental, LLC.
PROJECT: Lower Passaic River Remedial Investigation
ASSAY: Hyalella azteca 28 Day Sediment Assay
TASK: Daily Overlying Water Qualities

	Temp	DO Conc	pH	SpCond	Salinity
Mean:	22.51	8.17		337	0.16
Minimum:	17.95	0.75	6.77	218	0.11
Maximum:	24.41	9.30	8.08	442	0.21

LabID	Field ID	Sample Number	Day	Datetime M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-000	Lab Control	000	0	12/07/2012 08:59:43	22.21	5.94	6.91	338	0.16
22800-001	UPRT18I	001	0	12/07/2012 09:00:19	22.32	6.54	6.93	341	0.16
22800-002	UPRT18H	002	0	12/07/2012 09:00:31	22.31	7.18	6.95	327	0.16
22800-003	UPRT18J	003	0	12/07/2012 09:00:46	22.27	6.84	6.94	334	0.16
22800-004	UPRT18K	004	0	12/07/2012 09:00:57	22.29	6.78	6.93	328	0.16
22800-005	UPRT19J	005	0	12/07/2012 09:01:06	22.23	6.72	6.91	333	0.16
22800-006	UPRT19K	006	0	12/07/2012 09:01:18	22.16	5.62	6.86	340	0.16
22800-007	UPRT19L	007	0	12/07/2012 09:01:27	22.16	5.97	6.86	340	0.16
22800-008	UPRT19M	008	0	12/07/2012 09:01:36	22.11	6.83	6.93	335	0.16
22800-009	UPRT20A	009	0	12/07/2012 09:01:52	22.13	7.11	6.97	341	0.16
22800-010	UPRT20B	010	0	12/07/2012 09:02:45	22.03	0.75	6.82	354	0.17
22800-011	UPRT20C	011	0	12/07/2012 09:03:11	21.95	4.60	6.85	359	0.17
22800-012	UPRT20D	012	0	12/07/2012 09:03:35	21.97	5.78	6.85	345	0.17
22800-013	UPRT20E	013	0	12/07/2012 09:04:08	22.18	7.14	7.05	352	0.17
22800-014	UPRT20F	014	0	12/07/2012 09:04:48	22.01	4.88	6.77	351	0.17
22800-015	UPRT20G	015	0	12/07/2012 09:04:57	22.01	5.02	6.80	340	0.16
22800-016	UPRT21A	016	0	12/07/2012 09:05:06	22.05	5.68	6.88	357	0.17
22800-017	UPRT21B	017	0	12/07/2012 09:05:43	21.92	4.18	6.83	442	0.21
22800-018	UPRT21C	018	0	12/07/2012 09:06:07	21.88	5.42	7.02	354	0.17
22800-019	UPRT21D	019	0	12/07/2012 09:06:24	22.06	5.84	7.06	351	0.17
22800-020	UPRT21E	020	0	12/07/2012 09:06:34	22.02	5.85	7.00	367	0.18
22800-021	UPRT21F	021	0	12/07/2012 09:08:42	21.94	4.73	6.99	376	0.18
22800-022	UPRT21G	022	0	12/07/2012 09:09:13	21.89	5.76	6.96	337	0.16
22800-023	UPRT22A	023	0	12/07/2012 09:09:23	21.85	6.56	7.07	333	0.16
22800-024	UPRT22B	024	0	12/07/2012 09:09:32	21.90	7.16	7.14	353	0.17
22800-000	Lab Control	000	1	12/08/2012 12:46:11	19.74	8.35	7.77	315	0.15
22800-001	UPRT18I	001	1	12/08/2012 12:46:55	19.77	8.62	7.75	326	0.16
22800-002	UPRT18H	002	1	12/08/2012 12:47:09	19.79	8.64	7.74	322	0.16
22800-003	UPRT18J	003	1	12/08/2012 12:47:45	19.83	8.59	7.74	329	0.16
22800-004	UPRT18K	004	1	12/08/2012 12:47:56	19.79	8.76	7.74	317	0.15
22800-005	UPRT19J	005	1	12/08/2012 12:48:17	19.71	8.62	7.69	327	0.16
22800-006	UPRT19K	006	1	12/08/2012 12:48:37	19.71	8.62	7.68	319	0.15
22800-007	UPRT19L	007	1	12/08/2012 12:48:55	19.57	8.85	7.73	315	0.15
22800-008	UPRT19M	008	1	12/08/2012 12:49:20	19.45	8.98	7.75	327	0.16
22800-009	UPRT20A	009	1	12/08/2012 12:49:37	19.41	8.95	7.79	336	0.16
22800-010	UPRT20B	010	1	12/08/2012 12:50:00	19.50	8.10	7.54	333	0.16
22800-011	UPRT20C	011	1	12/08/2012 12:50:30	19.35	8.62	7.76	344	0.17
22800-012	UPRT20D	012	1	12/08/2012 12:51:04	19.24	8.83	7.69	326	0.16
22800-013	UPRT20E	013	1	12/08/2012 12:51:28	19.12	8.87	7.73	322	0.16
22800-014	UPRT20F	014	1	12/08/2012 12:51:56	19.08	8.73	7.71	337	0.16

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-015	UPRT20G	015	1	12/08/2012 12:52:14	19.04	8.77	7.70	324	0.16
22800-016	UPRT21A	016	1	12/08/2012 12:52:25	18.98	8.80	7.72	333	0.16
22800-017	UPRT21B	017	1	12/08/2012 12:52:45	18.96	8.90	7.73	373	0.18
22800-018	UPRT21C	018	1	12/08/2012 12:52:59	18.87	8.94	7.78	336	0.16
22800-019	UPRT21D	019	1	12/08/2012 12:53:36	18.75	9.01	7.76	336	0.16
22800-020	UPRT21E	020	1	12/08/2012 12:53:57	18.74	9.06	7.79	328	0.16
22800-021	UPRT21F	021	1	12/08/2012 12:54:15	18.74	8.99	7.75	338	0.16
22800-022	UPRT21G	022	1	12/08/2012 12:54:34	18.65	9.03	7.73	313	0.15
22800-023	UPRT22A	023	1	12/08/2012 12:54:55	18.55	9.01	7.75	316	0.15
22800-024	UPRT22B	024	1	12/08/2012 12:55:13	18.52	9.01	7.76	326	0.16
22800-000	Lab Control	000	2	12/09/2012 17:25:21	19.40	8.80	7.81	362	0.17
22800-001	UPRT18I	001	2	12/09/2012 17:26:25	19.23	8.97	7.72	330	0.16
22800-002	UPRT18H	002	2	12/09/2012 17:26:43	19.22	9.04	7.70	324	0.16
22800-003	UPRT18J	003	2	12/09/2012 17:28:05	19.18	8.98	7.67	329	0.16
22800-004	UPRT18K	004	2	12/09/2012 17:28:15	19.17	9.01	7.66	317	0.15
22800-005	UPRT19J	005	2	12/09/2012 17:28:51	19.06	8.98	7.55	332	0.16
22800-006	UPRT19K	006	2	12/09/2012 17:29:09	19.07	8.88	7.56	329	0.16
22800-007	UPRT19L	007	2	12/09/2012 17:29:56	18.93	8.93	7.64	321	0.15
22800-008	UPRT19M	008	2	12/09/2012 17:30:15	18.79	9.10	7.63	309	0.15
22800-009	UPRT20A	009	2	12/09/2012 17:30:28	18.69	9.20	7.64	328	0.16
22800-010	UPRT20B	010	2	12/09/2012 17:30:47	18.65	9.00	7.58	328	0.16
22800-011	UPRT20C	011	2	12/09/2012 17:31:05	18.52	8.97	7.62	336	0.16
22800-012	UPRT20D	012	2	12/09/2012 17:31:17	18.47	9.19	7.62	314	0.15
22800-013	UPRT20E	013	2	12/09/2012 17:31:46	18.46	9.30	7.61	307	0.15
22800-014	UPRT20F	014	2	12/09/2012 17:32:05	18.42	9.22	7.58	326	0.16
22800-015	UPRT20G	015	2	12/09/2012 17:32:20	18.38	9.14	7.57	310	0.15
22800-016	UPRT21A	016	2	12/09/2012 17:32:36	18.38	9.18	7.60	323	0.16
22800-017	UPRT21B	017	2	12/09/2012 17:32:53	18.45	9.17	7.64	338	0.16
22800-018	UPRT21C	018	2	12/09/2012 17:33:23	18.34	9.19	7.61	332	0.16
22800-019	UPRT21D	019	2	12/09/2012 17:33:41	18.29	9.23	7.64	320	0.15
22800-020	UPRT21E	020	2	12/09/2012 17:33:53	18.20	9.28	7.65	320	0.15
22800-021	UPRT21F	021	2	12/09/2012 17:34:03	18.18	9.29	7.63	352	0.17
22800-022	UPRT21G	022	2	12/09/2012 17:34:22	18.12	9.20	7.60	329	0.16
22800-023	UPRT22A	023	2	12/09/2012 17:34:35	18.01	9.18	7.58	330	0.16
22800-024	UPRT22B	024	2	12/09/2012 17:34:47	17.95	9.28	7.59	341	0.16
22800-000	Lab Control	000	3	12/10/2012 09:49:32	20.02	8.44	7.27	336	0.16
22800-001	UPRT18I	001	3	12/10/2012 09:50:08	19.99	8.48	7.42	320	0.15
22800-002	UPRT18H	002	3	12/10/2012 09:50:17	19.96	8.68	7.47	316	0.15
22800-003	UPRT18J	003	3	12/10/2012 09:50:27	19.96	8.81	7.50	320	0.15
22800-004	UPRT18K	004	3	12/10/2012 09:50:36	19.90	8.88	7.53	313	0.15
22800-005	UPRT19J	005	3	12/10/2012 09:50:45	19.82	8.94	7.52	319	0.15
22800-006	UPRT19K	006	3	12/10/2012 09:50:56	19.76	8.89	7.47	316	0.15
22800-007	UPRT19L	007	3	12/10/2012 09:51:08	19.62	8.85	7.50	314	0.15
22800-008	UPRT19M	008	3	12/10/2012 09:51:18	19.48	8.93	7.54	307	0.15
22800-009	UPRT20A	009	3	12/10/2012 09:51:27	19.38	9.03	7.57	319	0.15
22800-010	UPRT20B	010	3	12/10/2012 09:51:37	19.35	9.04	7.57	316	0.15
22800-011	UPRT20C	011	3	12/10/2012 09:51:45	19.31	8.87	7.55	322	0.16
22800-012	UPRT20D	012	3	12/10/2012 09:51:52	19.23	8.90	7.55	311	0.15
22800-013	UPRT20E	013	3	12/10/2012 09:52:08	19.02	9.08	7.34	312	0.15
22800-014	UPRT20F	014	3	12/10/2012 09:52:17	18.95	9.15	7.50	317	0.15
22800-015	UPRT20G	015	3	12/10/2012 09:52:24	18.89	9.16	7.54	306	0.15

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-016	UPRT21A	016	3	12/10/2012 09:52:33	18.87	9.14	7.56	312	0.15
22800-017	UPRT21B	017	3	12/10/2012 09:52:41	18.88	9.11	7.57	322	0.16
22800-018	UPRT21C	018	3	12/10/2012 09:52:51	18.91	9.05	7.58	318	0.15
22800-019	UPRT21D	019	3	12/10/2012 09:53:00	18.92	9.07	7.59	311	0.15
22800-020	UPRT21E	020	3	12/10/2012 09:53:07	18.91	9.10	7.57	312	0.15
22800-021	UPRT21F	021	3	12/10/2012 09:53:16	18.98	9.11	7.58	326	0.16
22800-022	UPRT21G	022	3	12/10/2012 09:53:33	18.91	9.11	7.42	311	0.15
22800-023	UPRT22A	023	3	12/10/2012 09:53:50	18.80	9.00	7.57	313	0.15
22800-024	UPRT22B	024	3	12/10/2012 09:53:59	18.71	9.04	7.59	318	0.15
22800-000	Lab Control	000	4	12/11/2012 09:48:49	24.23	8.33	7.34	365	0.18
22800-001	UPRT18I	001	4	12/11/2012 09:49:52	24.37	7.93	7.61	366	0.18
22800-002	UPRT18H	002	4	12/11/2012 09:50:08	24.33	8.14	7.67	355	0.17
22800-003	UPRT18J	003	4	12/11/2012 09:50:16	24.36	8.19	7.67	361	0.17
22800-004	UPRT18K	004	4	12/11/2012 09:50:24	24.35	8.23	7.67	350	0.17
22800-005	UPRT19J	005	4	12/11/2012 09:50:32	24.26	8.31	7.69	360	0.17
22800-006	UPRT19K	006	4	12/11/2012 09:50:50	24.18	8.19	7.67	364	0.18
22800-007	UPRT19L	007	4	12/11/2012 09:50:57	24.17	8.15	7.67	337	0.16
22800-008	UPRT19M	008	4	12/11/2012 09:51:05	24.15	8.18	7.68	327	0.16
22800-009	UPRT20A	009	4	12/11/2012 09:51:12	24.12	8.24	7.70	341	0.16
22800-010	UPRT20B	010	4	12/11/2012 09:51:20	24.06	8.25	7.69	332	0.16
22800-011	UPRT20C	011	4	12/11/2012 09:51:29	23.97	8.06	7.65	339	0.16
22800-012	UPRT20D	012	4	12/11/2012 09:51:38	23.94	8.17	7.68	322	0.16
22800-013	UPRT20E	013	4	12/11/2012 09:51:46	23.92	8.22	7.66	325	0.16
22800-014	UPRT20F	014	4	12/11/2012 09:51:54	23.88	8.28	7.67	353	0.17
22800-015	UPRT20G	015	4	12/11/2012 09:52:01	23.81	8.32	7.68	347	0.17
22800-016	UPRT21A	016	4	12/11/2012 09:52:10	23.77	8.28	7.68	350	0.17
22800-017	UPRT21B	017	4	12/11/2012 09:52:18	23.72	8.27	7.70	363	0.18
22800-018	UPRT21C	018	4	12/11/2012 09:52:25	23.70	8.25	7.71	359	0.17
22800-019	UPRT21D	019	4	12/11/2012 09:52:32	23.75	8.24	7.72	349	0.17
22800-020	UPRT21E	020	4	12/11/2012 09:52:39	23.77	8.25	7.73	351	0.17
22800-021	UPRT21F	021	4	12/11/2012 09:52:45	23.74	8.28	7.69	396	0.19
22800-022	UPRT21G	022	4	12/11/2012 09:52:53	23.74	8.21	7.68	381	0.18
22800-023	UPRT22A	023	4	12/11/2012 09:53:00	23.73	8.16	7.69	378	0.18
22800-024	UPRT22B	024	4	12/11/2012 09:53:08	23.67	8.24	7.73	377	0.18
22800-000	Lab Control	000	5	12/12/2012 07:33:19	22.78	7.81	7.46	347	0.17
22800-001	UPRT18I	001	5	12/12/2012 07:33:55	23.09	7.83	7.57	344	0.17
22800-002	UPRT18H	002	5	12/12/2012 07:34:06	23.06	8.03	7.61	337	0.16
22800-003	UPRT18J	003	5	12/12/2012 07:34:16	23.07	8.08	7.62	343	0.17
22800-004	UPRT18K	004	5	12/12/2012 07:34:27	23.00	8.18	7.65	339	0.16
22800-005	UPRT19J	005	5	12/12/2012 07:34:35	22.91	8.24	7.63	342	0.16
22800-006	UPRT19K	006	5	12/12/2012 07:34:43	22.83	8.24	7.63	340	0.16
22800-007	UPRT19L	007	5	12/12/2012 07:34:51	22.81	8.20	7.62	326	0.16
22800-008	UPRT19M	008	5	12/12/2012 07:35:02	22.81	8.22	7.64	317	0.15
22800-009	UPRT20A	009	5	12/12/2012 07:35:10	22.80	8.24	7.65	332	0.16
22800-010	UPRT20B	010	5	12/12/2012 07:35:18	22.74	8.23	7.65	323	0.16
22800-011	UPRT20C	011	5	12/12/2012 07:35:27	22.64	8.07	7.64	327	0.16
22800-012	UPRT20D	012	5	12/12/2012 07:35:35	22.59	8.15	7.66	310	0.15
22800-013	UPRT20E	013	5	12/12/2012 07:35:43	22.55	8.23	7.65	321	0.15
22800-014	UPRT20F	014	5	12/12/2012 07:35:51	22.51	8.29	7.65	333	0.16
22800-015	UPRT20G	015	5	12/12/2012 07:35:59	22.43	8.32	7.65	324	0.16
22800-016	UPRT21A	016	5	12/12/2012 07:36:07	22.35	8.30	7.65	332	0.16

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-017	UPRT21B	017	5	12/12/2012 07:36:15	22.24	8.30	7.54	344	0.17
22800-018	UPRT21C	018	5	12/12/2012 07:36:25	22.22	8.31	7.44	342	0.17
22800-019	UPRT21D	019	5	12/12/2012 07:36:36	22.33	8.31	7.55	333	0.16
22800-020	UPRT21E	020	5	12/12/2012 07:36:45	22.32	8.30	7.61	335	0.16
22800-021	UPRT21F	021	5	12/12/2012 07:36:54	22.29	8.34	7.62	351	0.17
22800-022	UPRT21G	022	5	12/12/2012 07:37:03	22.27	8.26	7.62	338	0.16
22800-023	UPRT22A	023	5	12/12/2012 07:37:11	22.23	8.25	7.62	344	0.17
22800-024	UPRT22B	024	5	12/12/2012 07:37:22	22.08	8.37	7.67	346	0.17
22800-000	Lab Control	000	6	12/13/2012 13:25:05	23.62	8.43	7.40	345	0.17
22800-001	UPRT18I	001	6	12/13/2012 13:25:30	23.75	8.00	7.53	338	0.16
22800-002	UPRT18H	002	6	12/13/2012 13:25:41	23.74	8.27	7.61	331	0.16
22800-003	UPRT18J	003	6	12/13/2012 13:25:51	23.76	8.33	7.65	340	0.16
22800-004	UPRT18K	004	6	12/13/2012 13:26:02	23.71	8.36	7.68	337	0.16
22800-005	UPRT19J	005	6	12/13/2012 13:26:11	23.60	8.37	7.68	338	0.16
22800-006	UPRT19K	006	6	12/13/2012 13:26:20	23.53	8.34	7.64	330	0.16
22800-007	UPRT19L	007	6	12/13/2012 13:26:31	23.51	8.26	7.65	323	0.16
22800-008	UPRT19M	008	6	12/13/2012 13:26:42	23.49	8.31	7.68	319	0.15
22800-009	UPRT20A	009	6	12/13/2012 13:26:53	23.48	8.34	7.71	333	0.16
22800-010	UPRT20B	010	6	12/13/2012 13:27:08	23.22	8.33	7.59	326	0.16
22800-011	UPRT20C	011	6	12/13/2012 13:27:17	23.27	8.12	7.65	325	0.16
22800-012	UPRT20D	012	6	12/13/2012 13:27:27	23.27	8.22	7.70	307	0.15
22800-013	UPRT20E	013	6	12/13/2012 13:27:36	23.27	8.24	7.68	321	0.15
22800-014	UPRT20F	014	6	12/13/2012 13:27:44	23.24	8.29	7.69	323	0.16
22800-015	UPRT20G	015	6	12/13/2012 13:27:53	23.16	8.30	7.67	319	0.15
22800-016	UPRT21A	016	6	12/13/2012 13:28:03	23.11	8.29	7.69	326	0.16
22800-017	UPRT21B	017	6	12/13/2012 13:28:12	23.07	8.28	7.68	347	0.17
22800-018	UPRT21C	018	6	12/13/2012 13:28:19	23.06	8.22	7.65	342	0.17
22800-019	UPRT21D	019	6	12/13/2012 13:28:26	23.10	8.22	7.69	327	0.16
22800-020	UPRT21E	020	6	12/13/2012 13:28:35	23.08	8.26	7.72	331	0.16
22800-021	UPRT21F	021	6	12/13/2012 13:28:52	23.05	8.14	7.56	338	0.16
22800-022	UPRT21G	022	6	12/13/2012 13:29:01	23.04	8.05	7.49	326	0.16
22800-023	UPRT22A	023	6	12/13/2012 13:29:08	23.04	8.11	7.56	333	0.16
22800-024	UPRT22B	024	6	12/13/2012 13:29:17	22.99	8.23	7.66	337	0.16
22800-000	Lab Control	000	7	12/14/2012 08:25:50	22.70	7.99	7.28	335	0.16
22800-001	UPRT18I	001	7	12/14/2012 08:26:22	22.81	7.56	7.47	330	0.16
22800-002	UPRT18H	002	7	12/14/2012 08:26:31	22.84	7.91	7.54	325	0.16
22800-003	UPRT18J	003	7	12/14/2012 08:26:40	22.85	8.12	7.60	333	0.16
22800-004	UPRT18K	004	7	12/14/2012 08:26:49	22.77	8.24	7.64	330	0.16
22800-005	UPRT19J	005	7	12/14/2012 08:26:57	22.67	8.33	7.67	333	0.16
22800-006	UPRT19K	006	7	12/14/2012 08:27:05	22.61	8.34	7.67	324	0.16
22800-007	UPRT19L	007	7	12/14/2012 08:27:16	22.54	8.35	7.69	320	0.15
22800-008	UPRT19M	008	7	12/14/2012 08:27:28	22.48	8.40	7.70	313	0.15
22800-009	UPRT20A	009	7	12/14/2012 08:27:38	22.48	8.39	7.71	325	0.16
22800-010	UPRT20B	010	7	12/14/2012 08:27:46	22.47	8.34	7.69	320	0.15
22800-011	UPRT20C	011	7	12/14/2012 08:27:56	22.37	8.20	7.70	317	0.15
22800-012	UPRT20D	012	7	12/14/2012 08:28:04	22.26	8.31	7.73	302	0.15
22800-013	UPRT20E	013	7	12/14/2012 08:28:13	22.14	8.39	7.71	316	0.15
22800-014	UPRT20F	014	7	12/14/2012 08:28:22	22.07	8.46	7.71	319	0.15
22800-015	UPRT20G	015	7	12/14/2012 08:28:29	21.92	8.44	7.70	317	0.15
22800-016	UPRT21A	016	7	12/14/2012 08:28:37	21.72	8.48	7.70	321	0.16
22800-017	UPRT21B	017	7	12/14/2012 08:28:45	21.67	8.50	7.63	338	0.16

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-018	UPRT21C	018	7	12/14/2012 08:28:53	21.71	8.47	7.53	338	0.16
22800-019	UPRT21D	019	7	12/14/2012 08:29:02	21.75	8.47	7.61	323	0.16
22800-020	UPRT21E	020	7	12/14/2012 08:29:12	21.63	8.54	7.67	327	0.16
22800-021	UPRT21F	021	7	12/14/2012 08:29:20	21.60	8.58	7.68	330	0.16
22800-022	UPRT21G	022	7	12/14/2012 08:29:28	21.53	8.55	7.67	317	0.15
22800-023	UPRT22A	023	7	12/14/2012 08:29:36	21.40	8.55	7.69	323	0.16
22800-024	UPRT22B	024	7	12/14/2012 08:29:45	21.22	8.65	7.72	328	0.16
22800-000	Lab Control	000	8	12/15/2012 08:21:54	22.53	8.54	7.66	368	0.18
22800-001	UPRT18I	001	8	12/15/2012 08:23:00	22.78	8.38	7.87	331	0.16
22800-002	UPRT18H	002	8	12/15/2012 08:23:44	22.46	8.36	7.99	331	0.16
22800-003	UPRT18J	003	8	12/15/2012 08:24:05	22.48	8.39	7.97	334	0.16
22800-004	UPRT18K	004	8	12/15/2012 08:24:19	22.37	8.48	7.97	330	0.16
22800-005	UPRT19J	005	8	12/15/2012 08:24:35	22.36	8.48	7.93	331	0.16
22800-006	UPRT19K	006	8	12/15/2012 08:24:49	22.19	8.50	7.92	328	0.16
22800-007	UPRT19L	007	8	12/15/2012 08:25:06	22.11	8.53	7.94	325	0.16
22800-008	UPRT19M	008	8	12/15/2012 08:25:20	21.95	8.55	7.95	318	0.15
22800-009	UPRT20A	009	8	12/15/2012 08:25:41	21.68	8.66	8.02	333	0.16
22800-010	UPRT20B	010	8	12/15/2012 08:25:53	21.60	8.58	7.98	325	0.16
22800-011	UPRT20C	011	8	12/15/2012 08:26:17	21.30	8.70	8.07	319	0.15
22800-012	UPRT20D	012	8	12/15/2012 08:26:44	21.27	8.63	8.00	310	0.15
22800-013	UPRT20E	013	8	12/15/2012 08:26:57	21.20	8.55	7.96	318	0.15
22800-014	UPRT20F	014	8	12/15/2012 08:27:23	21.14	8.63	7.91	312	0.15
22800-015	UPRT20G	015	8	12/15/2012 08:27:51	20.79	8.77	7.96	314	0.15
22800-016	UPRT21A	016	8	12/15/2012 08:28:08	20.74	8.83	7.97	318	0.15
22800-017	UPRT21B	017	8	12/15/2012 08:28:23	20.83	8.75	7.94	339	0.16
22800-018	UPRT21C	018	8	12/15/2012 08:28:37	20.76	8.67	7.97	331	0.16
22800-019	UPRT21D	019	8	12/15/2012 08:28:54	20.64	8.77	7.98	314	0.15
22800-020	UPRT21E	020	8	12/15/2012 08:29:15	20.41	8.88	7.97	319	0.15
22800-021	UPRT21F	021	8	12/15/2012 08:29:34	20.47	8.79	7.95	329	0.16
22800-022	UPRT21G	022	8	12/15/2012 08:29:47	20.26	8.76	7.83	316	0.15
22800-023	UPRT22A	023	8	12/15/2012 08:30:14	20.03	8.96	7.95	318	0.15
22800-024	UPRT22B	024	8	12/15/2012 08:30:45	19.84	8.91	7.96	325	0.16
22800-000	Lab Control	000	9	12/16/2012 07:23:14	22.24	8.11	7.44	348	0.17
22800-001	UPRT18I	001	9	12/16/2012 07:23:58	22.21	8.45	7.54	334	0.16
22800-002	UPRT18H	002	9	12/16/2012 07:24:07	22.30	8.46	7.65	337	0.16
22800-003	UPRT18J	003	9	12/16/2012 07:24:17	22.28	8.48	7.71	335	0.16
22800-004	UPRT18K	004	9	12/16/2012 07:24:25	22.20	8.51	7.73	333	0.16
22800-005	UPRT19J	005	9	12/16/2012 07:24:35	22.11	8.55	7.70	334	0.16
22800-006	UPRT19K	006	9	12/16/2012 07:24:43	22.05	8.55	7.61	331	0.16
22800-007	UPRT19L	007	9	12/16/2012 07:24:52	21.99	8.58	7.60	328	0.16
22800-008	UPRT19M	008	9	12/16/2012 07:25:01	21.91	8.61	7.68	323	0.16
22800-009	UPRT20A	009	9	12/16/2012 07:25:11	21.74	8.65	7.74	338	0.16
22800-010	UPRT20B	010	9	12/16/2012 07:25:20	21.64	8.66	7.75	330	0.16
22800-011	UPRT20C	011	9	12/16/2012 07:25:28	21.46	8.51	7.75	333	0.16
22800-012	UPRT20D	012	9	12/16/2012 07:25:39	21.26	8.63	7.59	315	0.15
22800-013	UPRT20E	013	9	12/16/2012 07:25:48	21.14	8.65	7.33	320	0.15
22800-014	UPRT20F	014	9	12/16/2012 07:25:57	21.05	8.72	7.37	319	0.15
22800-015	UPRT20G	015	9	12/16/2012 07:26:06	20.87	8.76	7.45	320	0.15
22800-016	UPRT21A	016	9	12/16/2012 07:26:14	20.71	8.81	7.55	323	0.16
22800-017	UPRT21B	017	9	12/16/2012 07:26:24	20.72	8.83	7.58	325	0.16
22800-018	UPRT21C	018	9	12/16/2012 07:26:33	20.69	8.75	7.57	342	0.17

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-019	UPRT21D	019	9	12/16/2012 07:26:40	20.63	8.76	7.64	317	0.15
22800-020	UPRT21E	020	9	12/16/2012 07:26:47	20.55	8.81	7.69	319	0.15
22800-021	UPRT21F	021	9	12/16/2012 07:26:55	20.46	8.89	7.69	335	0.16
22800-022	UPRT21G	022	9	12/16/2012 07:27:03	20.34	8.83	7.66	317	0.15
22800-023	UPRT22A	023	9	12/16/2012 07:27:15	19.95	9.09	7.54	320	0.15
22800-024	UPRT22B	024	9	12/16/2012 07:27:24	19.95	9.10	7.68	324	0.16
22800-000	Lab Control	000	10	12/17/2012 08:56:29	23.39	7.96	7.70	345	0.17
22800-001	UPRT18I	001	10	12/17/2012 08:56:46	23.50	7.94	7.73	335	0.16
22800-002	UPRT18H	002	10	12/17/2012 08:56:55	23.48	8.09	7.77	338	0.16
22800-003	UPRT18J	003	10	12/17/2012 08:57:09	23.41	8.23	7.79	334	0.16
22800-004	UPRT18K	004	10	12/17/2012 08:57:19	23.38	8.25	7.79	335	0.16
22800-005	UPRT19J	005	10	12/17/2012 08:57:28	23.31	8.28	7.76	337	0.16
22800-006	UPRT19K	006	10	12/17/2012 08:57:37	23.25	8.27	7.72	333	0.16
22800-007	UPRT19L	007	10	12/17/2012 08:57:46	23.23	8.26	7.73	326	0.16
22800-008	UPRT19M	008	10	12/17/2012 08:57:56	23.20	8.31	7.74	322	0.16
22800-009	UPRT20A	009	10	12/17/2012 08:58:03	23.17	8.35	7.75	338	0.16
22800-010	UPRT20B	010	10	12/17/2012 08:58:11	23.10	8.32	7.76	332	0.16
22800-011	UPRT20C	011	10	12/17/2012 08:58:36	22.88	8.11	7.80	343	0.17
22800-012	UPRT20D	012	10	12/17/2012 08:58:48	22.97	8.13	7.76	312	0.15
22800-013	UPRT20E	013	10	12/17/2012 08:58:56	23.00	8.12	7.74	318	0.15
22800-014	UPRT20F	014	10	12/17/2012 08:59:09	22.98	8.26	7.71	325	0.16
22800-015	UPRT20G	015	10	12/17/2012 08:59:20	22.88	8.31	7.71	329	0.16
22800-016	UPRT21A	016	10	12/17/2012 08:59:42	22.84	8.42	7.76	327	0.16
22800-017	UPRT21B	017	10	12/17/2012 08:59:56	22.93	8.25	7.57	324	0.16
22800-018	UPRT21C	018	10	12/17/2012 09:00:10	22.94	8.15	7.70	355	0.17
22800-019	UPRT21D	019	10	12/17/2012 09:00:19	22.98	8.21	7.79	322	0.16
22800-020	UPRT21E	020	10	12/17/2012 09:00:27	22.96	8.27	7.80	326	0.16
22800-021	UPRT21F	021	10	12/17/2012 09:00:35	22.90	8.32	7.81	354	0.17
22800-022	UPRT21G	022	10	12/17/2012 09:00:48	22.81	8.27	7.82	319	0.15
22800-023	UPRT22A	023	10	12/17/2012 09:01:00	22.83	8.34	7.79	323	0.16
22800-024	UPRT22B	024	10	12/17/2012 09:01:09	22.80	8.37	7.78	325	0.16
22800-000	Lab Control	000	11	12/18/2012 09:25:38	24.18	7.64	7.42	334	0.16
22800-001	UPRT18I	001	11	12/18/2012 09:26:25	24.41	7.71	7.63	331	0.16
22800-002	UPRT18H	002	11	12/18/2012 09:26:37	24.35	8.05	7.71	336	0.16
22800-003	UPRT18J	003	11	12/18/2012 09:26:49	24.34	8.14	7.75	331	0.16
22800-004	UPRT18K	004	11	12/18/2012 09:26:59	24.31	8.16	7.74	332	0.16
22800-005	UPRT19J	005	11	12/18/2012 09:27:10	24.23	8.20	7.71	331	0.16
22800-006	UPRT19K	006	11	12/18/2012 09:27:19	24.18	8.19	7.67	329	0.16
22800-007	UPRT19L	007	11	12/18/2012 09:27:35	24.19	8.22	7.70	324	0.16
22800-008	UPRT19M	008	11	12/18/2012 09:27:44	24.16	8.22	7.72	321	0.15
22800-009	UPRT20A	009	11	12/18/2012 09:27:53	24.13	8.25	7.76	337	0.16
22800-010	UPRT20B	010	11	12/18/2012 09:28:09	24.01	7.96	7.78	337	0.16
22800-011	UPRT20C	011	11	12/18/2012 09:28:18	23.92	7.79	7.77	354	0.17
22800-012	UPRT20D	012	11	12/18/2012 09:28:28	23.92	7.99	7.80	315	0.15
22800-013	UPRT20E	013	11	12/18/2012 09:28:36	23.91	8.12	7.75	319	0.15
22800-014	UPRT20F	014	11	12/18/2012 09:28:45	23.91	8.24	7.73	323	0.16
22800-015	UPRT20G	015	11	12/18/2012 09:28:55	23.80	8.29	7.75	327	0.16
22800-016	UPRT21A	016	11	12/18/2012 09:29:05	23.78	8.29	7.76	323	0.16
22800-017	UPRT21B	017	11	12/18/2012 09:29:21	23.85	8.25	7.46	320	0.15
22800-018	UPRT21C	018	11	12/18/2012 09:29:32	23.88	8.17	7.43	350	0.17
22800-019	UPRT21D	019	11	12/18/2012 09:29:42	23.91	8.20	7.63	321	0.15

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-020	UPRT21E	020	11	12/18/2012 09:30:00	23.87	8.27	7.76	323	0.16
22800-021	UPRT21F	021	11	12/18/2012 09:30:21	23.70	8.23	7.87	353	0.17
22800-022	UPRT21G	022	11	12/18/2012 09:30:30	23.71	8.11	7.90	316	0.15
22800-023	UPRT22A	023	11	12/18/2012 09:30:44	23.76	8.23	7.85	321	0.16
22800-024	UPRT22B	024	11	12/18/2012 09:30:56	23.74	8.28	7.82	320	0.15
22800-000	Lab Control	000	12	12/19/2012 11:52:43	23.98	7.58	7.60	335	0.16
22800-001	UPRT18I	001	12	12/19/2012 11:53:17	24.19	7.52	7.66	335	0.16
22800-002	UPRT18H	002	12	12/19/2012 11:53:38	24.09	8.01	7.81	343	0.17
22800-003	UPRT18J	003	12	12/19/2012 11:53:48	24.11	8.09	7.83	338	0.16
22800-004	UPRT18K	004	12	12/19/2012 11:54:11	24.05	8.14	7.80	332	0.16
22800-005	UPRT19J	005	12	12/19/2012 11:54:19	23.99	8.14	7.78	334	0.16
22800-006	UPRT19K	006	12	12/19/2012 11:54:29	23.93	8.16	7.76	332	0.16
22800-007	UPRT19L	007	12	12/19/2012 11:54:37	23.93	8.18	7.76	330	0.16
22800-008	UPRT19M	008	12	12/19/2012 11:54:49	23.91	8.18	7.75	327	0.16
22800-009	UPRT20A	009	12	12/19/2012 11:55:00	23.87	8.17	7.79	350	0.17
22800-010	UPRT20B	010	12	12/19/2012 11:55:09	23.82	8.08	7.84	353	0.17
22800-011	UPRT20C	011	12	12/19/2012 11:55:19	23.75	7.83	7.87	363	0.18
22800-012	UPRT20D	012	12	12/19/2012 11:55:29	23.75	7.87	7.86	324	0.16
22800-013	UPRT20E	013	12	12/19/2012 11:55:45	23.80	7.93	7.81	326	0.16
22800-014	UPRT20F	014	12	12/19/2012 11:55:59	23.78	8.02	7.80	335	0.16
22800-015	UPRT20G	015	12	12/19/2012 11:56:05	23.74	8.04	7.80	338	0.16
22800-016	UPRT21A	016	12	12/19/2012 11:56:11	23.72	8.10	7.82	329	0.16
22800-017	UPRT21B	017	12	12/19/2012 11:56:17	23.75	8.12	7.80	329	0.16
22800-018	UPRT21C	018	12	12/19/2012 11:56:26	23.75	8.10	7.74	364	0.18
22800-019	UPRT21D	019	12	12/19/2012 11:56:34	23.73	8.10	7.82	325	0.16
22800-020	UPRT21E	020	12	12/19/2012 11:56:42	23.70	8.15	7.83	327	0.16
22800-021	UPRT21F	021	12	12/19/2012 11:56:49	23.64	8.19	7.84	376	0.18
22800-022	UPRT21G	022	12	12/19/2012 11:56:55	23.60	8.17	7.88	332	0.16
22800-023	UPRT22A	023	12	12/19/2012 11:57:02	23.60	8.20	7.87	336	0.16
22800-024	UPRT22B	024	12	12/19/2012 11:57:07	23.62	8.22	7.84	335	0.16
22800-000	Lab Control	000	13	12/20/2012 11:12:58	23.71	7.43	7.34	342	0.16
22800-001	UPRT18I	001	13	12/20/2012 11:13:27	23.92	7.05	7.39	343	0.17
22800-002	UPRT18H	002	13	12/20/2012 11:13:35	23.97	7.39	7.50	349	0.17
22800-003	UPRT18J	003	13	12/20/2012 11:13:45	24.00	7.61	7.60	345	0.17
22800-004	UPRT18K	004	13	12/20/2012 11:13:54	23.99	7.74	7.65	339	0.16
22800-005	UPRT19J	005	13	12/20/2012 11:14:06	23.87	7.84	7.36	343	0.17
22800-006	UPRT19K	006	13	12/20/2012 11:14:19	23.83	7.89	7.16	339	0.16
22800-007	UPRT19L	007	13	12/20/2012 11:14:29	23.85	7.94	7.31	336	0.16
22800-008	UPRT19M	008	13	12/20/2012 11:14:41	23.86	7.96	7.47	334	0.16
22800-009	UPRT20A	009	13	12/20/2012 11:14:49	23.84	7.96	7.57	357	0.17
22800-010	UPRT20B	010	13	12/20/2012 11:15:08	23.69	7.75	7.67	362	0.17
22800-011	UPRT20C	011	13	12/20/2012 11:15:16	23.73	7.48	7.75	371	0.18
22800-012	UPRT20D	012	13	12/20/2012 11:15:28	23.79	7.65	7.43	333	0.16
22800-013	UPRT20E	013	13	12/20/2012 11:15:37	23.82	7.75	7.18	330	0.16
22800-014	UPRT20F	014	13	12/20/2012 11:15:45	23.79	7.87	7.32	344	0.17
22800-015	UPRT20G	015	13	12/20/2012 11:15:53	23.74	7.91	7.50	346	0.17
22800-016	UPRT21A	016	13	12/20/2012 11:16:03	23.78	7.93	7.64	336	0.16
22800-017	UPRT21B	017	13	12/20/2012 11:16:15	23.80	7.87	7.62	338	0.16
22800-018	UPRT21C	018	13	12/20/2012 11:16:29	23.75	7.85	7.65	368	0.18
22800-019	UPRT21D	019	13	12/20/2012 11:16:52	23.76	7.85	7.81	333	0.16
22800-020	UPRT21E	020	13	12/20/2012 11:17:08	23.71	7.94	7.81	334	0.16

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-021	UPRT21F	021	13	12/20/2012 11:17:23	23.63	7.88	7.85	371	0.18
22800-022	UPRT21G	022	13	12/20/2012 11:17:44	23.65	7.90	7.85	331	0.16
22800-023	UPRT22A	023	13	12/20/2012 11:18:00	23.71	7.94	7.84	337	0.16
22800-024	UPRT22B	024	13	12/20/2012 11:18:18	23.69	7.88	7.78	335	0.16
22800-000	Lab Control	000	14	12/21/2012 09:27:20	23.96	7.58	7.49	336	0.16
22800-001	UPRT18I	001	14	12/21/2012 09:27:45	24.14	7.44	7.61	336	0.16
22800-002	UPRT18H	002	14	12/21/2012 09:27:58	24.14	7.83	7.75	344	0.17
22800-003	UPRT18J	003	14	12/21/2012 09:28:08	24.15	7.96	7.80	339	0.16
22800-004	UPRT18K	004	14	12/21/2012 09:28:20	24.13	8.01	7.81	332	0.16
22800-005	UPRT19J	005	14	12/21/2012 09:28:33	23.99	8.08	7.76	339	0.16
22800-006	UPRT19K	006	14	12/21/2012 09:28:50	23.93	8.03	7.78	332	0.16
22800-007	UPRT19L	007	14	12/21/2012 09:28:58	23.94	8.06	7.79	326	0.16
22800-008	UPRT19M	008	14	12/21/2012 09:29:06	23.94	8.10	7.78	326	0.16
22800-009	UPRT20A	009	14	12/21/2012 09:29:15	23.91	8.11	7.78	347	0.17
22800-010	UPRT20B	010	14	12/21/2012 09:29:23	23.88	8.08	7.81	353	0.17
22800-011	UPRT20C	011	14	12/21/2012 09:29:32	23.81	7.80	7.85	367	0.18
22800-012	UPRT20D	012	14	12/21/2012 09:29:42	23.81	7.86	7.88	327	0.16
22800-013	UPRT20E	013	14	12/21/2012 09:29:53	23.82	7.96	7.84	323	0.16
22800-014	UPRT20F	014	14	12/21/2012 09:30:04	23.76	8.07	7.86	341	0.16
22800-015	UPRT20G	015	14	12/21/2012 09:30:14	23.67	8.12	7.88	336	0.16
22800-016	UPRT21A	016	14	12/21/2012 09:30:24	23.71	8.12	7.87	332	0.16
22800-017	UPRT21B	017	14	12/21/2012 09:30:35	23.71	8.10	7.81	329	0.16
22800-018	UPRT21C	018	14	12/21/2012 09:30:44	23.70	8.04	7.79	357	0.17
22800-019	UPRT21D	019	14	12/21/2012 09:30:53	23.70	8.06	7.82	322	0.16
22800-020	UPRT21E	020	14	12/21/2012 09:31:01	23.68	8.12	7.80	325	0.16
22800-021	UPRT21F	021	14	12/21/2012 09:31:10	23.68	8.15	7.81	348	0.17
22800-022	UPRT21G	022	14	12/21/2012 09:31:19	23.65	8.10	7.80	317	0.15
22800-023	UPRT22A	023	14	12/21/2012 09:31:28	23.64	8.12	7.81	326	0.16
22800-024	UPRT22B	024	14	12/21/2012 09:31:36	23.62	8.15	7.78	323	0.16
22800-000	Lab Control	000	15	12/22/2012 09:52:12	24.03	7.29	7.34	359	0.17
22800-001	UPRT18I	001	15	12/22/2012 09:52:47	24.09	7.59	7.80	341	0.16
22800-002	UPRT18H	002	15	12/22/2012 09:53:03	24.04	7.90	7.98	348	0.17
22800-003	UPRT18J	003	15	12/22/2012 09:53:18	23.97	7.93	8.04	341	0.16
22800-004	UPRT18K	004	15	12/22/2012 09:53:33	23.91	8.00	8.02	333	0.16
22800-005	UPRT19J	005	15	12/22/2012 09:53:55	23.79	7.94	7.99	340	0.16
22800-006	UPRT19K	006	15	12/22/2012 09:54:09	23.73	7.99	8.01	336	0.16
22800-007	UPRT19L	007	15	12/22/2012 09:54:23	23.72	8.07	8.05	333	0.16
22800-008	UPRT19M	008	15	12/22/2012 09:54:34	23.72	8.07	8.00	332	0.16
22800-009	UPRT20A	009	15	12/22/2012 09:54:48	23.68	8.05	8.04	352	0.17
22800-010	UPRT20B	010	15	see note below					
22800-011	UPRT20C	011	15	12/22/2012 09:55:18	23.59	7.33	8.00	355	0.17
22800-012	UPRT20D	012	15	12/22/2012 09:55:43	23.10	7.98	8.03	332	0.16
22800-013	UPRT20E	013	15	12/22/2012 09:56:08	23.51	8.05	8.04	329	0.16
22800-014	UPRT20F	014	15	12/22/2012 09:56:23	23.53	8.00	8.08	349	0.17
22800-015	UPRT20G	015	15	12/22/2012 09:56:40	23.56	7.97	8.04	330	0.16
22800-016	UPRT21A	016	15	12/22/2012 09:56:55	23.45	7.85	7.94	333	0.16
22800-017	UPRT21B	017	15	12/22/2012 09:57:15	23.42	7.80	8.01	351	0.17
22800-018	UPRT21C	018	15	12/22/2012 09:57:27	23.38	7.99	8.02	313	0.15
22800-019	UPRT21D	019	15	12/22/2012 09:57:41	23.41	8.04	8.03	329	0.16
22800-020	UPRT21E	020	15	see note below					
22800-021	UPRT21F	021	15	12/22/2012 09:58:09	23.44	7.84	8.02	341	0.16

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-022	UPRT21G	022	15	12/22/2012 09:58:21	23.36	7.76	8.02	321	0.15
22800-023	UPRT22A	023	15	12/22/2012 09:58:43	23.30	8.17	8.01	326	0.16
22800-024	UPRT22B	024	15	12/22/2012 09:59:07	23.22	8.05	8.00	325	0.16
22800-000	Lab Control	000	16	12/23/2012 11:59:27	23.79	7.56	7.30	356	0.17
22800-001	UPRT18I	001	16	12/23/2012 12:00:19	23.82	8.14	7.76	350	0.17
22800-002	UPRT18H	002	16	12/23/2012 12:00:38	23.94	8.13	7.87	359	0.17
22800-003	UPRT18J	003	16	12/23/2012 12:01:04	23.91	8.16	7.92	352	0.17
22800-004	UPRT18K	004	16	12/23/2012 12:01:21	23.89	8.17	7.93	347	0.17
22800-005	UPRT19J	005	16	12/23/2012 12:01:37	23.75	8.17	7.66	356	0.17
22800-006	UPRT19K	006	16	12/23/2012 12:01:54	23.66	8.17	7.74	352	0.17
22800-007	UPRT19L	007	16	12/23/2012 12:02:11	23.63	8.26	7.90	341	0.16
22800-008	UPRT19M	008	16	12/23/2012 12:02:29	23.67	8.27	7.93	338	0.16
22800-009	UPRT20A	009	16	12/23/2012 12:02:56	23.57	8.25	7.99	364	0.18
22800-010	UPRT20B	010	16	12/23/2012 12:03:23	23.50	7.72	7.88	362	0.17
22800-011	UPRT20C	011	16	12/23/2012 12:03:48	23.42	8.05	8.00	387	0.19
22800-012	UPRT20D	012	16	12/23/2012 12:04:04	23.50	8.12	7.99	343	0.17
22800-013	UPRT20E	013	16	12/23/2012 12:04:19	23.48	8.21	7.99	339	0.16
22800-014	UPRT20F	014	16	12/23/2012 12:04:33	23.45	8.27	8.02	369	0.18
22800-015	UPRT20G	015	16	12/23/2012 12:04:51	23.40	8.30	8.04	354	0.17
22800-016	UPRT21A	016	16	12/23/2012 12:05:03	23.43	8.30	8.01	345	0.17
22800-017	UPRT21B	017	16	12/23/2012 12:05:15	23.29	8.29	7.93	351	0.17
22800-018	UPRT21C	018	16	12/23/2012 12:05:31	23.28	8.21	7.90	371	0.18
22800-019	UPRT21D	019	16	12/23/2012 12:05:50	23.28	8.34	7.99	335	0.16
22800-020	UPRT21E	020	16	12/23/2012 12:06:04	23.25	8.36	7.98	340	0.16
22800-021	UPRT21F	021	16	12/23/2012 12:06:18	23.26	8.30	7.94	346	0.17
22800-022	UPRT21G	022	16	12/23/2012 12:06:29	23.21	8.23	7.92	332	0.16
22800-023	UPRT22A	023	16	12/23/2012 12:06:50	23.14	8.35	7.97	342	0.17
22800-024	UPRT22B	024	16	12/23/2012 12:07:16	23.08	8.30	7.95	336	0.16
22800-000	Lab Control	000	17	12/24/2012 08:38:48	23.81	7.35	7.02	354	0.17
22800-001	UPRT18I	001	17	12/24/2012 08:39:14	23.97	7.54	7.32	339	0.16
22800-002	UPRT18H	002	17	12/24/2012 08:39:24	24.01	7.77	7.46	347	0.17
22800-003	UPRT18J	003	17	12/24/2012 08:39:44	23.94	7.83	7.58	343	0.17
22800-004	UPRT18K	004	17	12/24/2012 08:39:55	23.90	7.95	7.62	343	0.17
22800-005	UPRT19J	005	17	12/24/2012 08:40:04	23.80	8.01	7.59	351	0.17
22800-006	UPRT19K	006	17	12/24/2012 08:40:18	23.70	8.07	7.61	349	0.17
22800-007	UPRT19L	007	17	12/24/2012 08:40:29	23.64	8.15	7.71	337	0.16
22800-008	UPRT19M	008	17	12/24/2012 08:40:40	23.67	8.16	7.74	331	0.16
22800-009	UPRT20A	009	17	12/24/2012 08:40:49	23.62	8.14	7.75	353	0.17
22800-010	UPRT20B	010	17	12/24/2012 08:40:57	23.55	8.09	7.73	349	0.17
22800-011	UPRT20C	011	17	12/24/2012 08:41:06	23.47	7.88	7.73	376	0.18
22800-012	UPRT20D	012	17	12/24/2012 08:41:14	23.45	7.97	7.79	342	0.16
22800-013	UPRT20E	013	17	12/24/2012 08:41:22	23.45	8.07	7.82	333	0.16
22800-014	UPRT20F	014	17	12/24/2012 08:41:29	23.44	8.15	7.82	360	0.17
22800-015	UPRT20G	015	17	12/24/2012 08:41:37	23.42	8.17	7.84	343	0.17
22800-016	UPRT21A	016	17	12/24/2012 08:41:46	23.42	8.17	7.83	338	0.16
22800-017	UPRT21B	017	17	12/24/2012 08:41:53	23.33	8.19	7.79	338	0.16
22800-018	UPRT21C	018	17	12/24/2012 08:42:02	23.24	8.15	7.75	361	0.17
22800-019	UPRT21D	019	17	12/24/2012 08:42:10	23.23	8.15	7.78	331	0.16
22800-020	UPRT21E	020	17	12/24/2012 08:42:20	23.21	8.20	7.79	332	0.16
22800-021	UPRT21F	021	17	12/24/2012 08:42:29	23.22	8.21	7.64	341	0.16
22800-022	UPRT21G	022	17	12/24/2012 08:42:37	23.18	8.13	7.42	328	0.16

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-023	UPRT22A	023	17	12/24/2012 08:42:46	23.12	8.17	7.49	335	0.16
22800-024	UPRT22B	024	17	12/24/2012 08:42:56	23.07	8.21	7.61	334	0.16
22800-000	Lab Control	000	18	12/25/2012 13:06:32	24.04	7.30	7.04	354	0.17
22800-001	UPRT18I	001	18	12/25/2012 13:06:58	24.16	7.43	7.33	346	0.17
22800-002	UPRT18H	002	18	12/25/2012 13:07:07	24.16	7.72	7.47	351	0.17
22800-003	UPRT18J	003	18	12/25/2012 13:07:18	24.13	7.86	7.59	345	0.17
22800-004	UPRT18K	004	18	12/25/2012 13:07:28	24.07	7.93	7.64	347	0.17
22800-005	UPRT19J	005	18	12/25/2012 13:07:37	23.95	7.97	7.53	360	0.17
22800-006	UPRT19K	006	18	12/25/2012 13:07:56	23.84	8.10	7.46	354	0.17
22800-007	UPRT19L	007	18	12/25/2012 13:08:06	23.80	8.13	7.58	341	0.16
22800-008	UPRT19M	008	18	12/25/2012 13:08:17	23.82	8.11	7.68	334	0.16
22800-009	UPRT20A	009	18	12/25/2012 13:08:28	23.79	8.07	7.72	355	0.17
22800-010	UPRT20B	010	18	12/25/2012 13:08:38	23.69	7.95	7.72	351	0.17
22800-011	UPRT20C	011	18	12/25/2012 13:08:47	23.67	7.77	7.73	377	0.18
22800-012	UPRT20D	012	18	12/25/2012 13:08:55	23.67	7.85	7.78	348	0.17
22800-013	UPRT20E	013	18	12/25/2012 13:09:02	23.66	7.94	7.82	333	0.16
22800-014	UPRT20F	014	18	12/25/2012 13:09:10	23.66	8.03	7.84	362	0.17
22800-015	UPRT20G	015	18	12/25/2012 13:09:17	23.64	8.07	7.87	338	0.16
22800-016	UPRT21A	016	18	12/25/2012 13:09:25	23.65	8.10	7.86	337	0.16
22800-017	UPRT21B	017	18	12/25/2012 13:09:33	23.61	8.11	7.81	341	0.16
22800-018	UPRT21C	018	18	12/25/2012 13:09:42	23.52	8.04	7.71	357	0.17
22800-019	UPRT21D	019	18	12/25/2012 13:09:51	23.50	8.04	7.77	330	0.16
22800-020	UPRT21E	020	18	12/25/2012 13:10:00	23.49	8.10	7.80	332	0.16
22800-021	UPRT21F	021	18	12/25/2012 13:10:09	23.50	8.13	7.72	330	0.16
22800-022	UPRT21G	022	18	12/25/2012 13:10:18	23.48	8.07	7.61	327	0.16
22800-023	UPRT22A	023	18	12/25/2012 13:10:27	23.44	8.09	7.66	337	0.16
22800-024	UPRT22B	024	18	12/25/2012 13:10:36	23.40	8.15	7.74	331	0.16
22800-000	Lab Control	000	19	12/26/2012 09:00:49	23.84	8.31	7.19	357	0.17
22800-001	UPRT18I	001	19	12/26/2012 09:01:13	23.87	7.94	7.36	340	0.16
22800-002	UPRT18H	002	19	12/26/2012 09:01:27	23.91	8.20	7.53	346	0.17
22800-003	UPRT18J	003	19	12/26/2012 09:01:37	23.90	8.27	7.61	341	0.16
22800-004	UPRT18K	004	19	12/26/2012 09:01:49	23.83	8.31	7.66	342	0.16
22800-005	UPRT19J	005	19	12/26/2012 09:02:08	23.45	8.42	7.56	357	0.17
22800-006	UPRT19K	006	19	12/26/2012 09:02:19	23.54	8.35	7.56	346	0.17
22800-007	UPRT19L	007	19	12/26/2012 09:02:46	23.55	8.12	7.68	338	0.16
22800-008	UPRT19M	008	19	12/26/2012 09:02:55	23.55	8.11	7.70	337	0.16
22800-009	UPRT20A	009	19	12/26/2012 09:03:06	23.55	8.21	7.71	350	0.17
22800-010	UPRT20B	010	19	12/26/2012 09:03:21	23.53	8.00	7.64	340	0.16
22800-011	UPRT20C	011	19	12/26/2012 09:03:30	23.53	7.83	7.62	364	0.18
22800-012	UPRT20D	012	19	12/26/2012 09:03:38	23.52	7.97	7.65	346	0.17
22800-013	UPRT20E	013	19	12/26/2012 09:03:46	23.53	8.12	7.70	331	0.16
22800-014	UPRT20F	014	19	12/26/2012 09:03:55	23.53	8.21	7.68	353	0.17
22800-015	UPRT20G	015	19	12/26/2012 09:04:03	23.51	8.22	7.62	332	0.16
22800-016	UPRT21A	016	19	12/26/2012 09:04:10	23.52	8.24	7.65	334	0.16
22800-017	UPRT21B	017	19	12/26/2012 09:04:18	23.46	8.24	7.64	337	0.16
22800-018	UPRT21C	018	19	12/26/2012 09:04:27	23.36	8.12	7.60	348	0.17
22800-019	UPRT21D	019	19	12/26/2012 09:04:39	23.36	8.16	7.68	327	0.16
22800-020	UPRT21E	020	19	12/26/2012 09:04:49	23.35	8.24	7.72	338	0.16
22800-021	UPRT21F	021	19	12/26/2012 09:05:00	23.36	8.23	7.58	324	0.16
22800-022	UPRT21G	022	19	12/26/2012 09:05:10	23.32	8.14	7.39	326	0.16
22800-023	UPRT22A	023	19	12/26/2012 09:05:17	23.28	8.16	7.46	333	0.16

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-024	UPRT22B	024	19	12/26/2012 09:05:28	23.24	8.24	7.59	328	0.16
22800-000	Lab Control	000	20	12/27/2012 10:20:04	21.94	7.92	7.14	366	0.18
22800-001	UPRT18I	001	20	12/27/2012 10:20:37	21.99	8.10	7.42	332	0.16
22800-002	UPRT18H	002	20	12/27/2012 10:20:51	21.99	8.35	7.54	337	0.16
22800-003	UPRT18J	003	20	12/27/2012 10:21:03	21.98	8.39	7.60	335	0.16
22800-004	UPRT18K	004	20	12/27/2012 10:21:14	21.95	8.45	7.63	317	0.15
22800-005	UPRT19J	005	20	12/27/2012 10:21:26	21.87	8.44	7.61	350	0.17
22800-006	UPRT19K	006	20	12/27/2012 10:21:36	21.85	8.41	7.65	339	0.16
22800-007	UPRT19L	007	20	12/27/2012 10:21:45	21.84	8.44	7.68	331	0.16
22800-008	UPRT19M	008	20	12/27/2012 10:21:55	21.82	8.50	7.72	335	0.16
22800-009	UPRT20A	009	20	12/27/2012 10:22:05	21.82	8.52	7.74	342	0.17
22800-010	UPRT20B	010	20	12/27/2012 10:22:20	21.85	7.80	7.60	330	0.16
22800-011	UPRT20C	011	20	12/27/2012 10:22:33	21.84	7.12	7.55	352	0.17
22800-012	UPRT20D	012	20	12/27/2012 10:22:44	21.81	7.81	7.64	341	0.16
22800-013	UPRT20E	013	20	12/27/2012 10:22:53	21.80	8.22	7.72	326	0.16
22800-014	UPRT20F	014	20	12/27/2012 10:23:02	21.79	8.41	7.75	346	0.17
22800-015	UPRT20G	015	20	12/27/2012 10:23:14	21.80	8.46	7.77	324	0.16
22800-016	UPRT21A	016	20	12/27/2012 10:23:23	21.80	8.52	7.78	329	0.16
22800-017	UPRT21B	017	20	12/27/2012 10:23:34	21.74	8.48	7.72	336	0.16
22800-018	UPRT21C	018	20	12/27/2012 10:23:45	21.72	8.21	7.65	343	0.17
22800-019	UPRT21D	019	20	12/27/2012 10:23:55	21.71	8.30	7.71	326	0.16
22800-020	UPRT21E	020	20	12/27/2012 10:24:06	21.71	8.48	7.76	330	0.16
22800-021	UPRT21F	021	20	12/27/2012 10:24:17	21.72	8.50	7.69	313	0.15
22800-022	UPRT21G	022	20	12/27/2012 10:24:27	21.70	8.42	7.59	315	0.15
22800-023	UPRT22A	023	20	12/27/2012 10:24:39	21.66	8.46	7.64	323	0.16
22800-024	UPRT22B	024	20	12/27/2012 10:24:48	21.64	8.46	7.70	318	0.15
22800-000	Lab Control	000	21	12/28/2012 06:51:05	22.84	7.28	7.01	358	0.17
22800-001	UPRT18I	001	21	12/28/2012 06:51:26	22.89	7.22	7.17	329	0.16
22800-002	UPRT18H	002	21	12/28/2012 06:51:41	22.91	7.78	7.30	331	0.16
22800-003	UPRT18J	003	21	12/28/2012 06:51:50	22.86	7.90	7.35	330	0.16
22800-004	UPRT18K	004	21	12/28/2012 06:52:01	22.86	8.01	7.41	318	0.15
22800-005	UPRT19J	005	21	12/28/2012 06:52:09	22.82	8.06	7.45	345	0.17
22800-006	UPRT19K	006	21	12/28/2012 06:52:17	22.79	8.08	7.51	330	0.16
22800-007	UPRT19L	007	21	12/28/2012 06:52:25	22.80	8.10	7.54	327	0.16
22800-008	UPRT19M	008	21	12/28/2012 06:52:32	22.80	8.11	7.57	329	0.16
22800-009	UPRT20A	009	21	12/28/2012 06:52:39	22.77	8.14	7.60	335	0.16
22800-010	UPRT20B	010	21	12/28/2012 06:52:47	22.71	8.11	7.57	324	0.16
22800-011	UPRT20C	011	21	12/28/2012 06:52:55	22.64	7.47	7.51	343	0.17
22800-012	UPRT20D	012	21	12/28/2012 06:53:04	22.59	7.50	7.55	337	0.16
22800-013	UPRT20E	013	21	12/28/2012 06:53:14	22.58	7.85	7.61	326	0.16
22800-014	UPRT20F	014	21	12/28/2012 06:53:22	22.59	8.04	7.62	339	0.16
22800-015	UPRT20G	015	21	12/28/2012 06:53:31	22.58	8.09	7.63	321	0.15
22800-016	UPRT21A	016	21	12/28/2012 06:53:40	22.58	8.10	7.63	327	0.16
22800-017	UPRT21B	017	21	12/28/2012 06:53:48	22.54	8.12	7.60	330	0.16
22800-018	UPRT21C	018	21	12/28/2012 06:53:57	22.48	7.89	7.54	339	0.16
22800-019	UPRT21D	019	21	12/28/2012 06:54:05	22.46	7.93	7.56	323	0.16
22800-020	UPRT21E	020	21	12/28/2012 06:54:16	22.43	8.08	7.59	326	0.16
22800-021	UPRT21F	021	21	12/28/2012 06:54:24	22.43	8.14	7.58	313	0.15
22800-022	UPRT21G	022	21	12/28/2012 06:54:35	22.40	8.07	7.54	314	0.15
22800-023	UPRT22A	023	21	12/28/2012 06:54:46	22.37	8.04	7.57	322	0.16
22800-024	UPRT22B	024	21	12/28/2012 06:54:53	22.32	8.10	7.59	318	0.15

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-000	Lab Control	000	22	12/29/2012 09:55:47	22.82	7.33	7.36	351	0.17
22800-001	UPRT18I	001	22	12/29/2012 09:57:19	22.96	8.00	7.59	340	0.16
22800-002	UPRT18H	002	22	12/29/2012 09:57:44	22.86	8.23	7.67	341	0.16
22800-003	UPRT18J	003	22	12/29/2012 09:58:05	22.77	8.37	7.68	332	0.16
22800-004	UPRT18K	004	22	12/29/2012 09:58:24	22.64	8.25	7.73	361	0.17
22800-005	UPRT19J	005	22	12/29/2012 09:58:37	22.64	8.25	7.74	344	0.17
22800-006	UPRT19K	006	22	12/29/2012 09:58:49	22.62	8.36	7.76	351	0.17
22800-007	UPRT19L	007	22	12/29/2012 09:58:57	22.59	8.30	7.72	338	0.16
22800-008	UPRT19M	008	22	12/29/2012 09:59:25	22.52	7.97	7.68	358	0.17
22800-009	UPRT20A	009	22	12/29/2012 10:01:24	22.59	8.00	7.49	353	0.17
22800-010	UPRT20B	010	22	12/29/2012 10:01:59	22.50	5.80	7.27	341	0.16
22800-011	UPRT20C	011	22	12/29/2012 10:02:27	22.51	7.52	7.51	359	0.17
22800-012	UPRT20D	012	22	12/29/2012 10:02:43	22.51	7.96	7.62	357	0.17
22800-013	UPRT20E	013	22	12/29/2012 10:02:59	22.48	8.28	7.72	343	0.17
22800-014	UPRT20F	014	22	12/29/2012 10:03:14	22.52	8.37	7.71	352	0.17
22800-015	UPRT20G	015	22	12/29/2012 10:03:31	22.45	8.36	7.74	332	0.16
22800-016	UPRT21A	016	22	12/29/2012 10:03:46	22.47	8.21	7.77	338	0.16
22800-017	UPRT21B	017	22	12/29/2012 10:04:06	22.40	7.88	7.67	348	0.17
22800-018	UPRT21C	018	22	12/29/2012 10:04:35	22.37	7.76	7.66	341	0.16
22800-019	UPRT21D	019	22	12/29/2012 10:04:57	22.30	8.28	7.75	338	0.16
22800-020	UPRT21E	020	22	12/29/2012 10:05:17	22.26	8.49	7.78	342	0.17
22800-021	UPRT21F	021	22	12/29/2012 10:05:27	22.29	8.39	7.76	218	0.11
22800-022	UPRT21G	022	22	12/29/2012 10:05:48	22.20	8.37	7.73	336	0.16
22800-023	UPRT22A	023	22	12/29/2012 10:06:03	22.26	8.47	7.77	337	0.16
22800-024	UPRT22B	024	22	12/29/2012 10:06:54	22.22	8.58	7.84	335	0.16
22800-000	Lab Control	000	23	12/30/2012 11:20:35	22.88	7.25	6.87	374	0.18
22800-001	UPRT18I	001	23	12/30/2012 11:21:40	23.00	8.01	7.41	341	0.16
22800-002	UPRT18H	002	23	12/30/2012 11:22:06	22.91	7.97	7.55	339	0.16
22800-003	UPRT18J	003	23	12/30/2012 11:22:22	22.88	7.92	7.58	341	0.16
22800-004	UPRT18K	004	23	12/30/2012 11:22:46	22.82	8.05	7.60	339	0.16
22800-005	UPRT19J	005	23	12/30/2012 11:23:07	22.66	8.09	7.70	369	0.18
22800-006	UPRT19K	006	23	12/30/2012 11:23:36	22.62	8.10	7.73	343	0.17
22800-007	UPRT19L	007	23	12/30/2012 11:23:58	22.67	8.17	7.72	336	0.16
22800-008	UPRT19M	008	23	12/30/2012 11:24:33	22.66	8.24	7.77	335	0.16
22800-009	UPRT20A	009	23	12/30/2012 11:25:09	22.62	7.90	7.75	347	0.17
22800-010	UPRT20B	010	23	12/30/2012 11:25:50	22.54	6.44	7.33	329	0.16
22800-011	UPRT20C	011	23	12/30/2012 11:26:31	22.53	7.50	7.50	355	0.17
22800-012	UPRT20D	012	23	12/30/2012 11:26:58	22.51	8.05	7.66	351	0.17
22800-013	UPRT20E	013	23	12/30/2012 11:27:18	22.47	8.24	7.74	335	0.16
22800-014	UPRT20F	014	23	12/30/2012 11:27:45	22.43	8.12	7.72	348	0.17
22800-015	UPRT20G	015	23	12/30/2012 11:28:13	22.41	8.31	7.71	331	0.16
22800-016	UPRT21A	016	23	12/30/2012 11:28:30	22.42	8.34	7.73	338	0.16
22800-017	UPRT21B	017	23	12/30/2012 11:29:02	22.23	7.66	7.53	347	0.17
22800-018	UPRT21C	018	23	12/30/2012 11:29:34	22.25	8.20	7.65	350	0.17
22800-019	UPRT21D	019	23	12/30/2012 11:29:57	22.26	8.43	7.76	334	0.16
22800-020	UPRT21E	020	23	12/30/2012 11:30:23	22.25	8.43	7.76	338	0.16
22800-021	UPRT21F	021	23	12/30/2012 11:30:50	22.30	8.14	7.66	326	0.16
22800-022	UPRT21G	022	23	12/30/2012 11:31:08	22.18	8.38	7.70	329	0.16
22800-023	UPRT22A	023	23	12/30/2012 11:31:26	22.15	8.49	7.75	334	0.16
22800-024	UPRT22B	024	23	12/30/2012 11:31:38	22.01	8.55	7.77	327	0.16

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-000	Lab Control	000	24	12/31/2012 10:55:04	22.87	7.62	7.44	354	0.17
22800-001	UPRT18I	001	24	12/31/2012 10:56:40	22.94	7.94	7.73	339	0.16
22800-002	UPRT18H	002	24	12/31/2012 10:57:24	22.86	7.89	7.73	341	0.16
22800-003	UPRT18J	003	24	12/31/2012 10:58:04	22.84	7.96	7.76	340	0.16
22800-004	UPRT18K	004	24	12/31/2012 10:58:53	22.78	8.09	7.78	346	0.17
22800-005	UPRT19J	005	24	12/31/2012 10:59:49	22.58	7.96	7.91	370	0.18
22800-006	UPRT19K	006	24	12/31/2012 11:00:29	22.57	8.06	7.81	342	0.17
22800-007	UPRT19L	007	24	12/31/2012 11:01:15	22.61	8.08	7.79	338	0.16
22800-008	UPRT19M	008	24	12/31/2012 11:01:57	22.65	8.15	7.73	342	0.17
22800-009	UPRT20A	009	24	12/31/2012 11:02:37	22.62	8.05	7.77	346	0.17
22800-010	UPRT20B	010	24	12/31/2012 11:03:20	22.52	7.98	7.75	329	0.16
22800-011	UPRT20C	011	24	12/31/2012 11:04:11	22.59	7.87	7.74	356	0.17
22800-012	UPRT20D	012	24	12/31/2012 11:05:00	22.48	7.98	7.79	355	0.17
22800-013	UPRT20E	013	24	12/31/2012 11:05:46	22.47	8.13	7.88	339	0.16
22800-014	UPRT20F	014	24	12/31/2012 11:06:32	22.51	7.94	7.75	349	0.17
22800-015	UPRT20G	015	24	12/31/2012 11:07:00	22.50	7.92	7.76	335	0.16
22800-016	UPRT21A	016	24	12/31/2012 11:07:35	22.55	8.04	7.81	341	0.16
22800-017	UPRT21B	017	24	12/31/2012 11:08:37	22.43	7.56	7.51	348	0.17
22800-018	UPRT21C	018	24	12/31/2012 11:09:49	22.43	8.05	7.74	357	0.17
22800-019	UPRT21D	019	24	12/31/2012 11:10:25	22.41	8.21	7.83	336	0.16
22800-020	UPRT21E	020	24	12/31/2012 11:11:25	22.43	8.09	7.83	340	0.16
22800-021	UPRT21F	021	24	12/31/2012 11:12:15	22.39	8.01	7.68	335	0.16
22800-022	UPRT21G	022	24	12/31/2012 11:13:03	22.28	8.20	7.75	335	0.16
22800-023	UPRT22A	023	24	12/31/2012 11:13:36	22.27	8.15	7.80	341	0.16
22800-024	UPRT22B	024	24	12/31/2012 11:14:13	22.10	8.28	7.82	337	0.16
22800-000	Lab Control	000	25	01/01/2013 15:10:55	23.45	7.51	6.98	365	0.18
22800-001	UPRT18I	001	25	01/01/2013 15:12:16	23.48	7.90	7.55	339	0.16
22800-002	UPRT18H	002	25	01/01/2013 15:12:42	23.54	7.95	7.66	335	0.16
22800-003	UPRT18J	003	25	01/01/2013 15:13:03	23.51	7.97	7.68	339	0.16
22800-004	UPRT18K	004	25	01/01/2013 15:13:19	23.48	8.00	7.70	345	0.17
22800-005	UPRT19J	005	25	01/01/2013 15:13:39	23.26	8.08	7.80	376	0.18
22800-006	UPRT19K	006	25	01/01/2013 15:14:03	23.26	8.14	7.77	340	0.16
22800-007	UPRT19L	007	25	01/01/2013 15:14:19	23.32	8.18	7.78	334	0.16
22800-008	UPRT19M	008	25	01/01/2013 15:14:35	23.35	8.19	7.76	333	0.16
22800-009	UPRT20A	009	25	01/01/2013 15:14:53	23.30	8.12	7.76	356	0.17
22800-010	UPRT20B	010	25	01/01/2013 15:15:08	23.21	8.12	7.73	324	0.16
22800-011	UPRT20C	011	25	01/01/2013 15:15:24	23.20	8.07	7.69	350	0.17
22800-012	UPRT20D	012	25	01/01/2013 15:15:36	23.14	8.04	7.72	354	0.17
22800-013	UPRT20E	013	25	01/01/2013 15:16:01	23.13	8.22	7.80	330	0.16
22800-014	UPRT20F	014	25	01/01/2013 15:16:13	23.13	8.24	7.76	334	0.16
22800-015	UPRT20G	015	25	01/01/2013 15:16:30	23.12	8.13	7.70	318	0.15
22800-016	UPRT21A	016	25	01/01/2013 15:16:52	23.14	8.23	7.76	327	0.16
22800-017	UPRT21B	017	25	01/01/2013 15:17:15	22.98	7.88	7.52	334	0.16
22800-018	UPRT21C	018	25	01/01/2013 15:17:31	22.94	8.01	7.57	342	0.17
22800-019	UPRT21D	019	25	01/01/2013 15:17:49	22.95	8.28	7.73	320	0.15
22800-020	UPRT21E	020	25	01/01/2013 15:18:06	22.97	8.33	7.77	323	0.16
22800-021	UPRT21F	021	25	01/01/2013 15:18:19	22.95	8.32	7.74	320	0.15
22800-022	UPRT21G	022	25	01/01/2013 15:18:36	22.85	8.33	7.76	324	0.16
22800-023	UPRT22A	023	25	01/01/2013 15:18:51	22.87	8.40	7.80	330	0.16
22800-024	UPRT22B	024	25	01/01/2013 15:19:05	22.72	8.47	7.89	319	0.15
22800-000	Lab Control	000	26	01/02/2013 09:38:15	23.37	7.80	7.23	371	0.18

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-001	UPRT18I	001	26	01/02/2013 09:39:03	23.60	8.11	7.69	347	0.17
22800-002	UPRT18H	002	26	01/02/2013 09:39:22	23.50	8.14	7.78	347	0.17
22800-003	UPRT18J	003	26	01/02/2013 09:39:41	23.51	8.13	7.81	348	0.17
22800-004	UPRT18K	004	26	01/02/2013 09:40:07	23.43	8.10	7.79	350	0.17
22800-005	UPRT19J	005	26	01/02/2013 09:40:31	23.19	8.14	7.93	381	0.18
22800-006	UPRT19K	006	26	01/02/2013 09:41:07	23.24	8.19	7.89	348	0.17
22800-007	UPRT19L	007	26	01/02/2013 09:41:26	23.24	8.25	7.91	342	0.16
22800-008	UPRT19M	008	26	01/02/2013 09:41:43	23.31	8.24	7.90	339	0.16
22800-009	UPRT20A	009	26	01/02/2013 09:42:10	23.25	8.24	7.94	381	0.18
22800-010	UPRT20B	010	26	01/02/2013 09:42:33	23.19	8.23	7.91	335	0.16
22800-011	UPRT20C	011	26	01/02/2013 09:43:00	23.23	7.97	7.81	354	0.17
22800-012	UPRT20D	012	26	01/02/2013 09:43:24	23.11	8.13	7.91	360	0.17
22800-013	UPRT20E	013	26	01/02/2013 09:43:43	23.12	8.22	7.96	337	0.16
22800-014	UPRT20F	014	26	01/02/2013 09:44:04	23.09	8.19	7.89	342	0.17
22800-015	UPRT20G	015	26	01/02/2013 09:44:20	23.00	8.08	7.84	331	0.16
22800-016	UPRT21A	016	26	01/02/2013 09:44:43	23.06	8.20	7.92	350	0.17
22800-017	UPRT21B	017	26	01/02/2013 09:45:10	23.00	7.73	7.71	341	0.16
22800-018	UPRT21C	018	26	01/02/2013 09:45:38	22.93	8.02	7.83	350	0.17
22800-019	UPRT21D	019	26	01/02/2013 09:45:56	22.93	8.19	7.90	334	0.16
22800-020	UPRT21E	020	26	01/02/2013 09:46:19	22.96	8.23	7.93	344	0.17
22800-021	UPRT21F	021	26	01/02/2013 09:46:37	22.92	8.14	7.88	337	0.16
22800-022	UPRT21G	022	26	01/02/2013 09:46:51	22.81	8.17	7.89	337	0.16
22800-023	UPRT22A	023	26	01/02/2013 09:47:08	22.84	8.29	7.96	354	0.17
22800-024	UPRT22B	024	26	01/02/2013 09:47:28	22.64	8.45	8.05	342	0.16
22800-000	Lab Control	000	27	01/03/2013 10:23:53	21.18	8.74	7.51	414	0.20
22800-001	UPRT18I	001	27	01/03/2013 10:24:40	21.38	8.84	7.73	347	0.17
22800-002	UPRT18H	002	27	01/03/2013 10:24:56	21.29	8.86	7.76	346	0.17
22800-003	UPRT18J	003	27	01/03/2013 10:25:23	21.25	8.79	7.80	348	0.17
22800-004	UPRT18K	004	27	01/03/2013 10:25:37	21.21	8.74	7.78	354	0.17
22800-005	UPRT19J	005	27	01/03/2013 10:25:50	21.06	8.73	7.81	384	0.19
22800-006	UPRT19K	006	27	01/03/2013 10:26:08	21.00	8.69	7.82	348	0.17
22800-007	UPRT19L	007	27	01/03/2013 10:26:25	20.94	8.74	7.81	345	0.17
22800-008	UPRT19M	008	27	01/03/2013 10:26:42	21.00	8.82	7.82	339	0.16
22800-009	UPRT20A	009	27	01/03/2013 10:26:55	20.98	8.81	7.80	355	0.17
22800-010	UPRT20B	010	27	01/03/2013 10:27:11	20.87	8.76	7.78	338	0.16
22800-011	UPRT20C	011	27	01/03/2013 10:27:24	20.84	8.73	7.74	353	0.17
22800-012	UPRT20D	012	27	01/03/2013 10:27:36	20.81	8.58	7.75	360	0.17
22800-013	UPRT20E	013	27	01/03/2013 10:27:57	20.76	8.80	7.83	340	0.16
22800-014	UPRT20F	014	27	01/03/2013 10:28:21	20.78	8.58	7.75	335	0.16
22800-015	UPRT20G	015	27	01/03/2013 10:28:39	20.64	8.54	7.72	322	0.16
22800-016	UPRT21A	016	27	01/03/2013 10:28:59	20.70	8.63	7.76	332	0.16
22800-017	UPRT21B	017	27	01/03/2013 10:29:11	20.69	8.62	7.69	332	0.16
22800-018	UPRT21C	018	27	01/03/2013 10:29:23	20.66	8.41	7.65	346	0.17
22800-019	UPRT21D	019	27	01/03/2013 10:29:39	20.67	8.59	7.77	325	0.16
22800-020	UPRT21E	020	27	01/03/2013 10:29:58	20.61	8.72	7.78	331	0.16
22800-021	UPRT21F	021	27	01/03/2013 10:30:13	20.56	8.69	7.75	333	0.16
22800-022	UPRT21G	022	27	01/03/2013 10:30:32	20.41	8.80	7.80	331	0.16
22800-023	UPRT22A	023	27	01/03/2013 10:30:43	20.44	8.95	7.84	343	0.17
22800-024	UPRT22B	024	27	01/03/2013 10:30:56	20.37	8.97	7.94	336	0.16
22800-000	Lab Control	000	28	01/04/2013 08:53:43	23.43	7.44	7.28	399	0.19
22800-001	UPRT18I	001	28	01/04/2013 08:54:21	23.75	7.79	7.57	347	0.17

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-002	UPRT18H	002	28	01/04/2013 08:54:39	23.69	8.04	7.68	342	0.17
22800-003	UPRT18J	003	28	01/04/2013 08:54:57	23.64	8.15	7.72	348	0.17
22800-004	UPRT18K	004	28	01/04/2013 08:55:06	23.62	8.18	7.73	348	0.17
22800-005	UPRT19J	005	28	01/04/2013 08:55:15	23.49	8.16	7.74	382	0.18
22800-006	UPRT19K	006	28	01/04/2013 08:55:30	23.47	8.07	7.74	343	0.17
22800-007	UPRT19L	007	28	01/04/2013 08:55:47	23.44	8.16	7.78	349	0.17
22800-008	UPRT19M	008	28	01/04/2013 08:56:03	23.42	8.19	7.80	347	0.17
22800-009	UPRT20A	009	28	01/04/2013 08:56:18	23.40	8.18	7.78	352	0.17
22800-010	UPRT20B	010	28	01/04/2013 08:56:31	23.32	8.18	7.77	338	0.16
22800-011	UPRT20C	011	28	01/04/2013 08:56:43	23.28	8.15	7.70	348	0.17
22800-012	UPRT20D	012	28	01/04/2013 08:56:56	23.26	8.01	7.72	359	0.17
22800-013	UPRT20E	013	28	01/04/2013 08:57:05	23.24	8.10	7.77	340	0.16
22800-014	UPRT20F	014	28	01/04/2013 08:57:12	23.24	8.20	7.78	342	0.17
22800-015	UPRT20G	015	28	01/04/2013 08:57:26	23.25	8.09	7.70	332	0.16
22800-016	UPRT21A	016	28	01/04/2013 08:57:39	23.28	8.07	7.74	340	0.16
22800-017	UPRT21B	017	28	01/04/2013 08:57:55	23.23	7.97	7.52	342	0.17
22800-018	UPRT21C	018	28	01/04/2013 08:58:12	23.16	7.93	7.57	347	0.17
22800-019	UPRT21D	019	28	01/04/2013 08:58:21	23.14	8.09	7.67	333	0.16
22800-020	UPRT21E	020	28	01/04/2013 08:58:35	23.08	8.27	7.76	338	0.16
22800-021	UPRT21F	021	28	01/04/2013 08:58:51	23.08	8.20	7.71	329	0.16
22800-022	UPRT21G	022	28	01/04/2013 08:59:00	23.01	8.14	7.70	327	0.16
22800-023	UPRT22A	023	28	01/04/2013 08:59:10	23.00	8.28	7.76	336	0.16
22800-024	UPRT22B	024	28	01/04/2013 08:59:20	22.90	8.36	7.80	333	0.16

Note: On Day 15 all water qualities were observed, however two records were not saved to the file. The notation on the observation sheet refers to readings 10 and 19, which corresponds to readings for samples 010 and 020.

***Hyalella azteca* 28 Day Sediment Assay
Survival Counts**

STUDY: 22801		PROJECT: Lower Passaic River Remedial Investigation			
DATE: 01/04/13		CLIENT: Windward Environmental, LLC			
Sample Code	Sample Number	Rep	Pos	Survived	Initials
22800-007	007	1	1	9	JM
22800-015	015	1	2	8	
22800-016	016	1	3	6	
22800-014	014	1	4	0	
22800-009	009	1	5	5	
22800-018	018	1	6	10	10/9
22800-013	013	1	7	6	
22800-002	002	1	8	8	
22800-024	024	1	9	5	
22800-011	011	1	10	7	
22800-006	006	1	11	10	
22800-017	017	1	12	2	DM
22800-005	005	1	13	0	
22800-019	019	1	14	9	
22800-023	023	1	15	9	
22800-020	020	1	16	8	
22800-022	022	1	17	8	
22800-021	021	1	18	8	
22800-008	008	1	19	2	
22800-000	000	1	20	9	
22800-010	010	1	21	7	
22800-001	001	1	22	10	
22800-003	003	1	23	8	
22800-004	004	1	24	8	
22800-012	012	1	25	10	JM
22800-017	017	2	26	8	6
22800-019	019	2	27	6	
22800-002	002	2	28	6	
22800-008	008	2	29	4	
22800-009	009	2	30	7	
22800-023	023	2	31	6	
22800-021	021	2	32	10	
22800-006	006	2	33	10	
22800-022	022	2	34	8	
22800-020	020	2	35	5	
22800-007	007	2	36	8	DM
22800-004	004	2	37	6	
22800-024	024	2	38	6	
22800-011	011	2	39	10	10/8
22800-010	010	2	40	10	

***Hyalella azteca* 28 Day Sediment Assay
Survival Counts**

STUDY: 22801		PROJECT: Lower Passaic River Remedial Investigation			
DATE: 01/04/13		CLIENT: Windward Environmental, LLC			
Sample Code	Sample Number	Rep	Pos	Survived	Initials
22800-005	005	2	41	0	DM
22800-013	013	2	42	6	
22800-003	003	2	43	10	
22800-012	012	2	44	9	
22800-001	001	2	45	7	
22800-016	016	2	46	8	
22800-014	014	2	47	0	
22800-018	018	2	48	7	↓
22800-015	015	2	49	6	JM
22800-000	000	2	50	9	1
22800-022	022	3	51	3	
22800-000	000	3	52	10	
22800-003	003	3	53	9	
22800-016	016	3	54	9	
22800-004	004	3	55	9	
22800-008	008	3	56	1	
22800-002	002	3	57	10	
22800-010	010	3	58	9	
22800-019	019	3	59	5	
22800-017	017	3	60	3	
22800-005	005	3	61	0	
22800-001	001	3	62	7	
22800-015	015	3	63	5 7	
22800-011	011	3	64	*	
22800-024	024	3	65	7	
22800-020	020	3	66	1	
22800-018	018	3	67	7	
22800-021	021	3	68	7	
22800-007	007	3	69	7	
22800-009	009	3	70	8	
22800-014	014	3	71	0	
22800-012	012	3	72	7	
22800-023	023	3	73	10	
22800-006	006	3	74	8	
22800-013	013	3	75	8	
22800-006	006	4	76	8	
22800-001	001	4	77	9	
22800-009	009	4	78	9	
22800-011	011	4	79	3 4	
22800-004	004	4	80	10	↓

* Replicate lost
during recovery

***Hyalella azteca* 28 Day Sediment Assay
Survival Counts**

STUDY: 22801		PROJECT: Lower Passaic River Remedial Investigation			
DATE: 01/04/13		CLIENT: Windward Environmental, LLC			
Sample Code	Sample Number	Rep	Pos	Survived	Initials
22800-013	013	4	81	87	Jm
22800-024	024	4	82	7	
22800-007	007	4	83	5	
22800-014	014	4	84	0	
22800-017	017	4	85	1	
22800-012	012	4	86	9	
22800-008	008	4	87	6	
22800-019	019	4	88	9	
22800-003	003	4	89	9	
22800-002	002	4	90	10	
22800-022	022	4	91	8	
22800-010	010	4	92	8	↓
22800-023	023	4	93	7	CS
22800-000	000	4	94	7	
22800-005	005	4	95	0	
22800-021	021	4	96	8	
22800-018	018	4	97	8	
22800-020	020	4	98	5	
22800-015	015	4	99	8	
22800-016	016	4	100	4	
22800-014	014	5	101	0	
22800-015	015	5	102	5	
22800-017	017	5	103	0	
22800-022	022	5	104	8	
22800-010	010	5	105	7	
22800-024	024	5	106	6	
22800-009	009	5	107	4	
22800-016	016	5	108	5	
22800-019	019	5	109	6	
22800-013	013	5	110	4	
22800-002	002	5	111	8	
22800-023	023	5	112	8	
22800-007	007	5	113	5	
22800-021	021	5	114	8	
22800-012	012	5	115	3	↓
22800-020	020	5	116	7	km
22800-018	018	5	117	8	1
22800-001	001	5	118	7	
22800-004	004	5	119	8	
22800-006	006	5	120	8	↓

***Hyalella azteca* 28 Day Sediment Assay
Survival Counts**

STUDY: 22801		PROJECT: Lower Passaic River Remedial Investigation			
DATE: 01/04/13		CLIENT: Windward Environmental, LLC			
Sample Code	Sample Number	Rep	Pos	Survived	Initials
22800-005	005	5	121	0	ke
22800-008	008	5	122	3	
22800-011	011	5	123	8	
22800-003	003	5	124	9	
22800-000	000	5	125	10	
22800-011	011	6	126	10	
22800-016	016	6	127	8 9	
22800-003	003	6	128	9	
22800-022	022	6	129	1	
22800-013	013	6	130	8	
22800-009	009	6	131	6	
22800-005	005	6	132	0	
22800-014	014	6	133	0	
22800-021	021	6	134	5	
22800-001	001	6	135	10	
22800-018	018	6	136	6 7	
22800-008	008	6	137	7	
22800-024	024	6	138	9	
22800-012	012	6	139	10	↓
22800-015	015	6	140	9	JTP
22800-007	007	6	141	6	
22800-023	023	6	142	8	
22800-010	010	6	143	9	
22800-000	000	6	144	10	
22800-006	006	6	145	10	
22800-002	002	6	146	9	
22800-019	019	6	147	7	
22800-020	020	6	148	7	
22800-017	017	6	149	1	
22800-004	004	6	150	6	
22800-022	022	7	151	6	
22800-010	010	7	152	9	
22800-012	012	7	153	8	
22800-013	013	7	154	8	
22800-020	020	7	155	8 7	
22800-011	011	7	156	10	
22800-024	024	7	157	5	
22800-021	021	7	158	5	
22800-023	023	7	159	8	
22800-002	002	7	160	9	↓

***Hyalella azteca* 28 Day Sediment Assay
Survival Counts**

STUDY: 22801		PROJECT: Lower Passaic River Remedial Investigation			
DATE: 01/04/13		CLIENT: Windward Environmental, LLC			
Sample Code	Sample Number	Rep	Pos	Survived	Initials
22800-008	008	7	161	7	JTP
22800-014	014	7	162	0	
22800-017	017	7	163	1	↓
22800-015	015	7	164	5	CS
22800-003	003	7	165	9	
22800-019	019	7	166	1	
22800-006	006	7	167	8	
22800-004	004	7	168	7	
22800-016	016	7	169	7	
22800-018	018	7	170	8	
22800-000	000	7	171	8	
22800-007	007	7	172	3	
22800-005	005	7	173	0	
22800-009	009	7	174	0	
22800-001	001	7	175	6	
22800-012	012	8	176	3	
22800-000	000	8	177	9	
22800-009	009	8	178	9	
22800-002	002	8	179	8	
22800-010	010	8	180	1	AM
22800-013	013	8	181	6	
22800-023	023	8	182	8	
22800-006	006	8	183	9	
22800-017	017	8	184	1	
22800-003	003	8	185	9	
22800-011	011	8	186	6	
22800-001	001	8	187	2	
22800-019	019	8	188	7	
22800-020	020	8	189	6	
22800-007	007	8	190	9	
22800-022	022	8	191	8	
22800-016	016	8	192	7	✓
22800-018	018	8	193	8	JM
22800-015	015	8	194	6	
22800-004	004	8	195	6	
22800-005	005	8	196	0	
22800-024	024	8	197	2	
22800-008	008	8	198	5	
22800-014	014	8	199	1	
22800-021	021	8	200	7	

***Hyalella azteca* 28 Day Sediment Assay**

Study: 22801

Client: Windward Environmental, LLC

**Project: Lower Passaic River
Remedial Investigation**

	REP	TARE WEIGHT (mg)	<i>H. azteca</i> + FOIL (mg)	NET WEIGHT (mg)	# <i>H. azteca</i>	MEAN DRY WEIGHT PER Individual (mg)
START ORGANISMS	A	209.23	209.38	0.15	10	0.015
	B	209.64	209.78	0.14	10	0.014
	C	209.52	209.69	0.17	10	0.017
	D	208.98	209.12	0.14	10	0.014
RECORDED BY:		DM	DM	DM	DM	DM
DATE:		12/11/12	1/10/13	1/10/13	1/10/13	1/10/13

STUDY: 22801

CLIENT: Windward Environmental, LLC

PROJECT: Lower Passaic River Remedial Investigation

ASSAY: 28-Day H. azteca Survival and Growth

SPECIES: H. azteca

TASK: Dry Weight Data - AccuSeries Balance Output File

BALANCE: AccuSeries Model 225D

Serial #: 17008376

Sample	Rep	Position Assigned		Recorded by:	Recorded by:	Duplicates	
		by CETIS	in Assay			Total Wt (mg)	Tare Wt (mg)
22800-007	1	4	1	213.15	01/11/13	208.05	208.05
22800-015	1	8	2	212.22	JTP	208.05	DM
22800-016	1	9	3	212.76		209.60	
22800-014	1	11	4			207.44	
22800-009	1	22	5	209.48		207.97	
22800-018	1	24	6	211.92		209.20	
22800-013	1	23	7	211.16		208.73	
22800-002	1	10	8	212.10		208.75	
22800-024	1	20	9	210.58		207.07	207.07
22800-011	1	3	10	211.95		208.59	
22800-006	1	12	11	213.14		208.39	
22800-017	1	15	12	209.54		209.32	
22800-005	1	6	13			205.35	
22800-019	1	5	14	212.01		208.67	
22800-023	1	2	15	213.63		209.72	
22800-020	1	19	16	210.00		206.55	
22800-022	1	16	17	212.61		209.53	209.52
22800-021	1	1	18	212.89		209.86	JM
22800-008	1	17	19	208.51		207.72	
22800-000	1	18	20	215.05		208.52	215.06
22800-010	1	21	21	209.86		208.10	
22800-001	1	25	22	211.85		208.93	
22800-003	1	7	23	211.03		208.71	
22800-004	1	13	24	212.07		209.94	
22800-012	1	14	25	210.68		206.96	206.98
22800-017	2	42	26	209.58		207.74	
22800-019	2	33	27	210.96		207.94	
22800-002	2	41	28	210.41		208.19	
22800-008	2	47	29	209.53		208.16	
22800-009	2	30	30	211.94		209.93	
22800-023	2	29	31	211.07		209.39	
22800-021	2	44	32	213.09		209.20	
22800-006	2	35	33	212.84		208.48	208.49
22800-022	2	26	34	212.29		208.43	
22800-020	2	39	35	210.75		208.64	
22800-007	2	28	36	211.84		209.20	
22800-004	2	38	37	208.98		206.67	
22800-024	2	50	38	212.21		209.28	
22800-011	2	46	39	213.14		208.73	
22800-010	2	27	40	211.70		207.60	211.69
22800-005	2	40	41		01/05/13	208.59	208.60
22800-013	2	37	42	213.62		210.61	CS
22800-003	2	32	43	212.22		208.53	

Sample	Rep	Position Assigned		Recorded by: Total Wt (mg)	Recorded by: Tare Wt (mg)	Duplicates	
		by CETIS	in Assay			Total Wt (mg)	Tare Wt (mg)
22800-012	2	31	44	209.33	206.22		
22800-001	2	36	45	211.81	209.50		
22800-016	2	49	46	212.45	209.87		
22800-014	2	45	47		207.88		
22800-018	2	48	48	212.42	209.50		
22800-015	2	34	49	210.94	208.45		
22800-000	2	43	50	215.26	208.90		
22800-022	3	67	51	209.48	208.48		
22800-000	3	71	52	216.25	208.99		
22800-003	3	61	53	210.18	206.75		
22800-016	3	56	54	210.07	207.66		
22800-004	3	75	55	212.99	209.67		
22800-008	3	60	56	209.36	209.00		
22800-002	3	72	57	211.77	208.51		
22800-010	3	74	58	211.37	208.21		
22800-019	3	70	59	210.48	209.31		
22800-017	3	59	60	209.23	207.96	209.24	
22800-005	3	64	61		207.65		
22800-001	3	52	62	209.67	208.18		
22800-015	3	54	63	211.27	209.59		
22800-011	3	65	64		207.73		
22800-024	3	73	65	212.23	208.35		
22800-020	3	55	66	209.43	209.24		
22800-018	3	66	67	210.77	208.08		
22800-021	3	68	68	211.39	208.95		
22800-007	3	51	69	210.83	208.49		
22800-009	3	63	70	210.09	208.54		
22800-014	3	69	71		208.51		
22800-012	3	62	72	211.68	208.13		
22800-023	3	58	73	210.68	205.93		
22800-006	3	53	74	212.22	209.16		
22800-013	3	57	75	212.58	208.91		
22800-006	4	96	76	211.20	208.33		
22800-001	4	83	77	210.33	208.39		
22800-009	4	78	78	210.73	207.96		
22800-011	4	97	79	208.65	207.22		
22800-004	4	92	80	212.51	208.87	212.51	
22800-013	4	80	81	210.96	208.65		
22800-024	4	91	82	212.85	209.58		
22800-007	4	76	83	212.29	210.39		
22800-014	4	86	84		209.48		
22800-017	4	85	85	208.46	208.37		
22800-012	4	79	86	211.90	209.17		
22800-008	4	81	87	211.93	209.69		
22800-019	4	87	88	210.46	208.51		
22800-003	4	90	89	212.69	208.66		
22800-002	4	93	90	213.27	209.65		
22800-022	4	84	91	213.90	210.61		
22800-010	4	77	92	209.50	207.82		
22800-023	4	94	93	211.77	209.27		
22800-000	4	89	94	212.71	208.69		
22800-005	4	99	95		207.96		
22800-021	4	88	96	209.37	206.34		

Sample	Rep	Position Assigned		Recorded by: Total Wt (mg)	Recorded by: Tare Wt (mg)	Duplicates	
		by CETIS	in Assay			Total Wt (mg)	Tare Wt (mg)
22800-018	4	95	97	212.37	209.10		209.12
22800-020	4	82	98	212.43	211.05		
22800-015	4	100	99	213.79	211.40		
22800-016	4	98	100	210.22	209.13	210.22	
22800-014	5	102	101		211.06		
22800-015	5	124	102	210.72	209.08		
22800-017	5	115	103		209.30		
22800-022	5	103	104	211.95	209.25		
22800-010	5	118	105	212.28	209.42		209.41
22800-024	5	121	106	212.84	210.66		
22800-009	5	107	107	211.96	210.88		
22800-016	5	125	108	210.06	208.36		
22800-019	5	112	109	211.22	209.54		
22800-013	5	116	110	212.01	211.01		
22800-002	5	120	111	210.46	208.80		
22800-023	5	101	112	212.44	210.15		
22800-007	5	122	113	211.17	209.00	209.01	
22800-021	5	114	114	209.74	207.75		
22800-012	5	123	115	211.06	209.98		
22800-020	5	104	116	210.03	208.45		
22800-018	5	119	117	212.37	210.03		
22800-001	5	105	118	212.80	211.32		
22800-004	5	111	119	213.80	211.26		
22800-006	5	109	120	209.39	207.11	209.40	
22800-005	5	106	121		209.11		209.11
22800-008	5	108	122	209.81	208.80		
22800-011	5	110	123	211.78	209.06		
22800-003	5	113	124	212.15	209.59		
22800-000	5	117	125	212.08	207.14		
22800-011	6	139	126	211.54	206.81		
22800-016	6	130	127	216.27	213.57		
22800-003	6	146	128	213.36	210.41		
22800-022	6	150	129	210.00	208.35	208.34	
22800-013	6	136	130	213.10	210.63		
22800-009	6	131	131	211.23	209.49		
22800-005	6	149	132		207.85		
22800-014	6	137	133		209.46		
22800-021	6	144	134	212.14	210.86		
22800-001	6	148	135	213.63	211.43		
22800-018	6	128	136	212.03	209.76		
22800-008	6	126	137	212.07	209.94	209.94	
22800-024	6	143	138	211.49	208.58		
22800-012	6	135	139	211.84	209.87		
22800-015	6	134	140	214.01	212.35	214.02	
22800-007	6	145	141	210.13	208.08		
22800-023	6	129	142	213.02	210.05		
22800-010	6	127	143	211.02	208.71		
22800-000	6	140	144	212.71	207.91		
22800-006	6	141	145	214.41	210.01	210.02	
22800-002	6	142	146	213.21	210.40		
22800-019	6	138	147	208.65	206.98		
22800-020	6	147	148	212.01	210.54		
22800-017	6	132	149	209.50	209.40		

Sample	Rep	Position Assigned		Recorded by:	Recorded by:	Duplicates	
		by CETIS	in Assay			Total Wt (mg)	Tare Wt (mg)
22800-004	6	133	150	211.60	208.71		
22800-022	7	163	151	212.22	210.49		
22800-010	7	168	152	212.63	209.67		
22800-012	7	152	153	212.37	209.50		209.48
22800-013	7	155	154	211.91	209.66		
22800-020	7	171	155	211.01	209.61		
22800-011	7	164	156	215.16	211.65		
22800-024	7	160	157	211.60	209.97		
22800-021	7	156	158	209.72	208.27		
22800-023	7	153	159	213.86	210.99		
22800-002	7	162	160	210.56	208.36	210.55	
22800-008	7	175	161	213.23	210.84		210.83
22800-014	7	169	162		210.23		
22800-017	7	173	163	212.57	212.36		
22800-015	7	157	164	210.14	209.36		
22800-003	7	165	165	212.30	210.00		
22800-019	7	161	166	210.38	210.17		
22800-006	7	170	167	210.11	207.23		
22800-004	7	159	168	211.03	207.41		
22800-016	7	167	169	209.96	208.22		208.22
22800-018	7	154	170	213.25	210.25		
22800-000	7	158	171	216.57	210.75		
22800-007	7	172	172	211.86	211.51		
22800-005	7	151	173		210.10		
22800-009	7	174	174		207.52		
22800-001	7	166	175	212.60	211.49		
22800-012	8	190	176	207.98	207.68		
22800-000	8	188	177	214.46	209.39		209.39
22800-009	8	197	178	209.85	208.83		
22800-002	8	184	179	211.00	209.03		
22800-010	8	194	180	210.00	209.41	210.01	
22800-013	8	187	181	209.49	208.55		
22800-023	8	198	182	209.66	207.45		
22800-006	8	200	183	210.95	207.84		
22800-017	8	182	184	210.87	210.70		
22800-003	8	177	185	212.24	209.39		209.38
22800-011	8	183	186	209.87	208.62		
22800-001	8	192	187	208.67	207.95		
22800-019	8	189	188	209.50	208.48		
22800-020	8	191	189	208.36	207.19		
22800-007	8	176	190	214.21	212.18		
22800-022	8	196	191	212.37	209.47		
22800-016	8	180	192	209.60	207.56		
22800-018	8	185	193	211.70	209.11		209.10
22800-015	8	199	194	212.01	210.88		
22800-004	8	186	195	210.30	208.46		
22800-005	8	178	196		212.24		
22800-024	8	179	197	208.93	208.05		
22800-008	8	195	198	212.04	210.52		
22800-014	8	181	199	208.39	208.32		
22800-021	8	193	200	212.32	209.15		

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test						EnviroSystems, Inc.
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse
22800-001	16-4551-8127	12 Nov-12 10:13	17 Nov-12 13:05	25d 2h		
22800-002	12-7608-5227	12 Nov-12 12:17	17 Nov-12 13:05	25d		
22800-003	11-7795-6459	12 Nov-12 13:21	17 Nov-12 13:05	24d 23h		
22800-004	08-4834-2931	12 Nov-12 14:37	17 Nov-12 13:05	24d 21h		
22800-005	11-3775-7426	13 Nov-12 08:20	17 Nov-12 13:05	24d 4h		
22800-006	15-2324-2159	13 Nov-12 09:46	17 Nov-12 13:05	24d 2h		
22800-007	04-8067-7422	13 Nov-12 10:55	17 Nov-12 13:05	24d 1h		
22800-008	11-9606-6366	13 Nov-12 11:59	17 Nov-12 13:05	24d 0h		
22800-009	08-6088-6776	13 Nov-12 13:30	17 Nov-12 13:05	23d 22h		
22800-010	00-6504-4240	13 Nov-12 14:41	17 Nov-12 13:05	23d 21h		
22800-011	06-7617-7021	14 Nov-12 08:15	17 Nov-12 13:05	23d 4h		
22800-012	08-8087-7260	14 Nov-12 09:14	17 Nov-12 13:05	23d 3h		
22800-013	13-4098-0624	14 Nov-12 11:12	17 Nov-12 13:05	23d 1h		
22800-014	12-2328-2385	14 Nov-12 11:49	17 Nov-12 13:05	23d 0h		
22800-015	07-6377-7783	14 Nov-12 12:52	17 Nov-12 13:05	22d 23h		
22800-016	12-7040-7515	14 Nov-12 13:52	17 Nov-12 13:05	22d 22h		
22800-017	03-2230-4522	15 Nov-12 08:19	17 Nov-12 13:05	22d 4h		
22800-018	09-1843-1107	15 Nov-12 09:17	17 Nov-12 13:05	22d 3h		
22800-019	07-8610-6905	15 Nov-12 10:08	17 Nov-12 13:05	22d 2h		
22800-020	07-2784-0432	15 Nov-12 10:52	17 Nov-12 13:05	22d 1h		
22800-021	09-5811-7655	15 Nov-12 11:29	17 Nov-12 13:05	22d 1h		
22800-022	08-0539-1503	15 Nov-12 12:25	17 Nov-12 13:05	22d		
22800-023	04-1666-1117	16 Nov-12 08:06	17 Nov-12 13:05	21d 4h		
22800-024	09-8169-6091	16 Nov-12 09:09	17 Nov-12 13:05	21d 3h		
Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude	
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000			
22800-001	Freshwater Sediment	Lower Passaic River Ecological R	UPRT18I; 22800-001			
22800-002	Freshwater Sediment	Lower Passaic River Ecological R	UPRT18H; 22800-002			
22800-003	Freshwater Sediment	Lower Passaic River Ecological R	UPRT18J; 22800-003			
22800-004	Freshwater Sediment	Lower Passaic River Ecological R	UPRT18K; 22800-004			
22800-005	Freshwater Sediment	Lower Passaic River Ecological R	UPRT19J; 22800-005			
22800-006	Freshwater Sediment	Lower Passaic River Ecological R	UPRT19K; 22800-006			
22800-007	Freshwater Sediment	Lower Passaic River Ecological R	UPRT19L; 22800-007			
22800-008	Freshwater Sediment	Lower Passaic River Ecological R	UPRT19M; 22800-008			
22800-009	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20A; 22800-009			
22800-010	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20B; 22800-010			
22800-011	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20C; 22800-011			
22800-012	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20D; 22800-012			
22800-013	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20E; 22800-013			
22800-014	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20F; 22800-014			
22800-015	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20G; 22800-015			
22800-016	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21A; 22800-016			
22800-017	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21B; 22800-017			
22800-018	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21C; 22800-018			
22800-019	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21D; 22800-019			
22800-020	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21E; 22800-020			
22800-021	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21F; 22800-021			
22800-022	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21G; 22800-022			

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Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test					EnviroSystems, Inc.
Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
22800-023	Freshwater Sediment	Lower Passaic River Ecological R	UPRT22A; 22800-023		
22800-024	Freshwater Sediment	Lower Passaic River Ecological R	UPRT22B; 22800-024		

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Report Date:

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Test Code:

22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test
EnviroSystems, Inc.
Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.402	0.726	0.03803	0.1076	19.21%	0.0%
22800-001	8	0.1771	0.1178	0.2365	0.072	0.292	0.0251	0.071	40.08%	68.37%
22800-002	8	0.2636	0.2032	0.3241	0.166	0.362	0.02555	0.07228	27.42%	52.92%
22800-003	8	0.3016	0.2479	0.3553	0.23	0.403	0.02272	0.06426	21.31%	46.14%
22800-004	8	0.2786	0.2209	0.3363	0.184	0.364	0.0244	0.06901	24.77%	50.25%
22800-006	8	0.3464	0.2708	0.4219	0.228	0.475	0.03195	0.09037	26.09%	38.15%
22800-007	8	0.2323	0.1225	0.342	0.035	0.51	0.04642	0.1313	56.53%	58.53%
22800-008	8	0.1476	0.08608	0.2092	0.036	0.239	0.02603	0.07361	49.86%	73.64%
22800-009	7	0.1669	0.1116	0.2221	0.102	0.277	0.02258	0.05974	35.8%	70.2%
22800-010	8	0.2427	0.1523	0.3332	0.059	0.41	0.03826	0.1082	44.58%	56.65%
22800-011	7	0.3059	0.1809	0.4308	0.125	0.473	0.05107	0.1351	44.17%	45.38%
22800-012	8	0.2416	0.1405	0.3427	0.03	0.372	0.04275	0.1209	50.04%	56.85%
22800-013	8	0.226	0.1489	0.3031	0.094	0.367	0.03261	0.09224	40.82%	59.64%
22800-014	1	0.006999			0.006999	0.006999	0	0	0.0%	98.75%
22800-015	8	0.1992	0.1116	0.2869	0.078	0.417	0.03707	0.1048	52.62%	64.42%
22800-016	8	0.2177	0.1623	0.2732	0.109	0.316	0.02343	0.06628	30.44%	61.12%
22800-017	7	0.05571	-0.009301	0.1207	0.009001	0.184	0.02657	0.0703	126.2%	90.05%
22800-018	8	0.2725	0.2445	0.3005	0.227	0.327	0.01184	0.0335	12.29%	51.34%
22800-019	8	0.1758	0.0896	0.2619	0.021	0.334	0.03643	0.103	58.63%	68.62%
22800-020	8	0.1594	0.08223	0.2365	0.019	0.345	0.03263	0.09228	57.9%	71.54%
22800-021	8	0.2535	0.1775	0.3295	0.128	0.389	0.03215	0.09093	35.87%	54.73%
22800-022	8	0.2526	0.1716	0.3336	0.1	0.386	0.03425	0.09688	38.35%	54.89%
22800-023	8	0.2898	0.2065	0.373	0.168	0.475	0.03522	0.09961	34.38%	48.26%
22800-024	8	0.2649	0.1802	0.3495	0.088	0.388	0.0358	0.1013	38.23%	52.7%

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.48	0.7275	0.03828	0.1083	17.33%	0.0%
22800-001	8	0.2534	0.1992	0.3075	0.185	0.36	0.02289	0.06476	25.56%	59.44%
22800-002	8	0.3109	0.2499	0.3719	0.2075	0.4188	0.02579	0.07295	23.46%	50.23%
22800-003	8	0.334	0.2819	0.3862	0.2556	0.4478	0.02207	0.06242	18.69%	46.52%
22800-004	8	0.3759	0.3041	0.4477	0.2663	0.5171	0.03037	0.08589	22.85%	39.83%
22800-006	8	0.3854	0.3338	0.4369	0.285	0.475	0.0218	0.06165	16.0%	38.31%
22800-007	8	0.3411	0.2294	0.4528	0.1167	0.5667	0.04723	0.1336	39.16%	45.39%
22800-008	8	0.3447	0.3183	0.371	0.304	0.395	0.01114	0.03152	9.15%	44.83%
22800-009	7	0.252	0.1853	0.3187	0.1133	0.3078	0.02727	0.07215	28.63%	59.66%
22800-010	8	0.3508	0.2494	0.4523	0.21	0.59	0.04291	0.1214	34.59%	43.84%
22800-011	7	0.3944	0.2884	0.5005	0.2083	0.5513	0.04335	0.1147	29.08%	36.86%
22800-012	8	0.318	0.2155	0.4205	0.1	0.5071	0.04335	0.1226	38.56%	49.1%
22800-013	8	0.3365	0.2414	0.4316	0.1567	0.5017	0.04022	0.1138	33.81%	46.13%
22800-014	1	0.06999			0.06999	0.06999	0	0	0.0%	88.8%
22800-015	8	0.2915	0.1855	0.3975	0.156	0.5212	0.04483	0.1268	43.5%	53.34%
22800-016	8	0.3212	0.2475	0.3949	0.2486	0.5267	0.03117	0.08816	27.45%	48.58%
22800-017	7	0.2014	0.08664	0.3162	0.09001	0.4233	0.04691	0.1241	61.62%	67.75%
22800-018	8	0.3535	0.3128	0.3942	0.2925	0.4171	0.01722	0.0487	13.78%	43.41%
22800-019	8	0.2749	0.1808	0.3691	0.1457	0.5033	0.03981	0.1126	40.96%	55.99%
22800-020	8	0.2687	0.1842	0.3533	0.19	0.4312	0.03576	0.1011	37.64%	56.98%
22800-021	8	0.3428	0.2829	0.4028	0.2488	0.4529	0.02537	0.07175	20.93%	45.12%
22800-022	8	0.5313	0.1503	0.9123	0.2883	1.65	0.1611	0.4557	85.78%	14.95%
22800-023	8	0.3549	0.2937	0.4161	0.2763	0.475	0.02589	0.07324	20.64%	43.19%
22800-024	8	0.4581	0.3511	0.565	0.3233	0.702	0.04525	0.128	27.94%	26.67%

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Test Code:

22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test										EnviroSystems, Inc.
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
22800-000	8	0.9	0.8106	0.9894	0.7	1	0.0378	0.1069	11.88%	0.0%
22800-001	8	0.725	0.5072	0.9428	0.2	1	0.0921	0.2605	35.93%	19.44%
22800-002	8	0.85	0.7405	0.9595	0.6	1	0.04629	0.1309	15.4%	5.56%
22800-003	8	0.9	0.8553	0.9447	0.8	1	0.0189	0.05345	5.94%	0.0%
22800-004	8	0.75	0.6236	0.8764	0.6	1	0.05345	0.1512	20.16%	16.67%
22800-005	8	0	0	0	0	0	0	0	100.0%	
22800-006	8	0.8875	0.8046	0.9704	0.8	1	0.03504	0.0991	11.17%	1.39%
22800-007	8	0.65	0.4713	0.8287	0.3	0.9	0.07559	0.2138	32.89%	27.78%
22800-008	8	0.4375	0.2482	0.6268	0.1	0.7	0.08004	0.2264	51.75%	51.39%
22800-009	8	0.6	0.3472	0.8528	0	0.9	0.1069	0.3024	50.4%	33.33%
22800-010	8	0.75	0.5135	0.9865	0.1	1	0.1	0.2828	37.71%	16.67%
22800-011	7	0.7571	0.5584	0.9559	0.4	1	0.08123	0.2149	28.39%	15.87%
22800-012	8	0.7375	0.4971	0.9779	0.3	1	0.1017	0.2875	38.99%	18.06%
22800-013	8	0.6625	0.5448	0.7802	0.4	0.8	0.04978	0.1408	21.25%	26.39%
22800-014	8	0.0125	0	0.04206	0	0.1	0.0125	0.03536	282.8%	98.61%
22800-015	8	0.675	0.5506	0.7994	0.5	0.9	0.05261	0.1488	22.05%	25.0%
22800-016	8	0.6875	0.5364	0.8386	0.4	0.9	0.06391	0.1808	26.29%	23.61%
22800-017	8	0.1875	0.0299	0.3451	0	0.6	0.06665	0.1885	100.5%	79.17%
22800-018	8	0.775	0.7159	0.8341	0.7	0.9	0.025	0.07071	9.12%	13.89%
22800-019	8	0.625	0.4119	0.8381	0.1	0.9	0.09014	0.255	40.79%	30.56%
22800-020	8	0.575	0.3921	0.7579	0.1	0.8	0.07734	0.2188	38.05%	36.11%
22800-021	8	0.725	0.5855	0.8645	0.5	1	0.05901	0.1669	23.02%	19.44%
22800-022	8	0.625	0.3939	0.8561	0.1	0.8	0.09774	0.2765	44.23%	30.56%
22800-023	8	0.8	0.7001	0.8999	0.6	1	0.04226	0.1195	14.94%	11.11%
22800-024	8	0.5875	0.4177	0.7573	0.2	0.9	0.07181	0.2031	34.57%	34.72%

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Test Code:

22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test								EnviroSystems, Inc.
Mean Dry Biomass-mg Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507
22800-001	0.292	0.231	0.149	0.194	0.148	0.22	0.111	0.072
22800-002	0.335	0.222	0.326	0.362	0.166	0.281	0.22	0.197
22800-003	0.232	0.369	0.343	0.403	0.256	0.295	0.23	0.285
22800-004	0.213	0.231	0.332	0.364	0.254	0.289	0.362	0.184
22800-005								
22800-006	0.475	0.436	0.306	0.287	0.228	0.44	0.288	0.311
22800-007	0.51	0.264	0.234	0.19	0.217	0.205	0.035	0.203
22800-008	0.079	0.137	0.036	0.224	0.101	0.213	0.239	0.152
22800-009	0.151	0.201	0.155	0.277	0.108	0.174		0.102
22800-010	0.176	0.41	0.316	0.168	0.286	0.231	0.296	0.059
22800-011	0.336	0.441	0.143	0.272	0.473	0.351	0.125	
22800-012	0.372	0.311	0.355	0.273	0.108	0.197	0.287	0.03
22800-013	0.243	0.301	0.367	0.231	0.1	0.247	0.225	0.094
22800-014								0.006999
22800-015	0.417	0.249	0.168	0.239	0.164	0.166	0.078	0.113
22800-016	0.316	0.258	0.241	0.109	0.17	0.27	0.174	0.204
22800-017	0.022	0.184	0.127	0.009001		0.01	0.021	0.017
22800-018	0.272	0.292	0.269	0.327	0.234	0.227	0.3	0.259
22800-019	0.334	0.302	0.117	0.195	0.168	0.167	0.021	0.102
22800-020	0.345	0.211	0.019	0.138	0.158	0.147	0.14	0.117
22800-021	0.303	0.389	0.244	0.303	0.199	0.128	0.145	0.317
22800-022	0.308	0.386	0.1	0.329	0.27	0.165	0.173	0.29
22800-023	0.391	0.168	0.475	0.25	0.229	0.297	0.287	0.221
22800-024	0.351	0.293	0.388	0.327	0.218	0.291	0.163	0.088
Mean Dry Weight-mg Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633
22800-001	0.292	0.33	0.2129	0.2156	0.2114	0.22	0.185	0.36
22800-002	0.4188	0.37	0.326	0.362	0.2075	0.3122	0.2444	0.2463
22800-003	0.29	0.369	0.3811	0.4478	0.2844	0.3278	0.2556	0.3167
22800-004	0.2663	0.385	0.3689	0.364	0.3175	0.4817	0.5171	0.3067
22800-006	0.475	0.436	0.3825	0.3587	0.285	0.44	0.36	0.3456
22800-007	0.5667	0.33	0.3343	0.38	0.434	0.3417	0.1167	0.2256
22800-008	0.395	0.3425	0.36	0.3733	0.3367	0.3043	0.3414	0.304
22800-009	0.302	0.2871	0.1938	0.3078	0.27	0.29	0.1133	
22800-010	0.2514	0.41	0.3511	0.21	0.4086	0.2567	0.3289	0.59
22800-011	0.48	0.5513	0.3575	0.34	0.473	0.351	0.2083	
22800-012	0.372	0.3456	0.5071	0.3033	0.36	0.197	0.3587	0.1
22800-013	0.405	0.5017	0.4587	0.33	0.25	0.3088	0.2813	0.1567
22800-014	0.06999							
22800-015	0.5212	0.415	0.24	0.2987	0.328	0.1844	0.156	0.1883
22800-016	0.5267	0.3225	0.2678	0.2725	0.34	0.3	0.2486	0.2914
22800-017	0.11	0.3067	0.4233	0.09001	0.1	0.21	0.17	
22800-018	0.3022	0.4171	0.3843	0.4087	0.2925	0.3243	0.375	0.3237
22800-019	0.3711	0.5033	0.234	0.2167	0.28	0.2386	0.21	0.1457
22800-020	0.4312	0.422	0.19	0.276	0.2257	0.21	0.2	0.195
22800-021	0.3787	0.389	0.3486	0.3787	0.2488	0.256	0.29	0.4529
22800-022	0.385	0.4825	0.3333	0.4112	0.3375	1.65	0.2883	0.3625
22800-023	0.4344	0.28	0.475	0.3571	0.2863	0.3713	0.3587	0.2763
22800-024	0.702	0.4883	0.5543	0.4671	0.3633	0.3233	0.326	0.44

CETIS Summary Report

Report Date:

14 Jan-13 14:30 (p 6 of 6)

Test Code:

22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test								EnviroSystems, Inc.
Proportion Survived Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9
22800-001	1	0.7	0.7	0.9	0.7	1	0.6	0.2
22800-002	0.8	0.6	1	1	0.8	0.9	0.9	0.8
22800-003	0.8	1	0.9	0.9	0.9	0.9	0.9	0.9
22800-004	0.8	0.6	0.9	1	0.8	0.6	0.7	0.6
22800-005	0	0	0	0	0	0	0	0
22800-006	1	1	0.8	0.8	0.8	1	0.8	0.9
22800-007	0.9	0.8	0.7	0.5	0.5	0.6	0.3	0.9
22800-008	0.2	0.4	0.1	0.6	0.3	0.7	0.7	0.5
22800-009	0.5	0.7	0.8	0.9	0.4	0.6	0	0.9
22800-010	0.7	1	0.9	0.8	0.7	0.9	0.9	0.1
22800-011	0.7	0.8	0.4	0.8	1	1	0.6	
22800-012	1	0.9	0.7	0.9	0.3	1	0.8	0.3
22800-013	0.6	0.6	0.8	0.7	0.4	0.8	0.8	0.6
22800-014	0	0	0	0	0	0	0	0.1
22800-015	0.8	0.6	0.7	0.8	0.5	0.9	0.5	0.6
22800-016	0.6	0.8	0.9	0.4	0.5	0.9	0.7	0.7
22800-017	0.2	0.6	0.3	0.1	0	0.1	0.1	0.1
22800-018	0.9	0.7	0.7	0.8	0.8	0.7	0.8	0.8
22800-019	0.9	0.6	0.5	0.9	0.6	0.7	0.1	0.7
22800-020	0.8	0.5	0.1	0.5	0.7	0.7	0.7	0.6
22800-021	0.8	1	0.7	0.8	0.8	0.5	0.5	0.7
22800-022	0.8	0.8	0.3	0.8	0.8	0.1	0.6	0.8
22800-023	0.9	0.6	1	0.7	0.8	0.8	0.8	0.8
22800-024	0.5	0.6	0.7	0.7	0.6	0.9	0.5	0.2

**CETIS Analytical Reports
Survival Comparisons**

**in support of the Ecological Risk Assessment for
Lower Passaic River Remedial Investigation
Purchase Order Number 2012-0042**

CETIS Analytical Report

Report Date: 14 Jan-13 14:35 (p 1 of 27)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test								EnviroSystems, Inc.			
Analysis ID:	03-2886-8188	Endpoint:	Proportion Survived				CETIS Version:	CETISv1.8.6			
Analyzed:	14 Jan-13 14:19	Analysis:	Parametric-Two Sample				Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-024	09-8169-6091	16 Nov-12 09:09	17 Nov-12 13:05	21d 3h							
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000								
22800-024	Freshwater Sediment	Lower Passaic River Ecological R	UPRT22B; 22800-024								
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	12.6%						
Equal Variance t Two-Sample Test											
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)		
22800-000		22800-024	3.957	1.761	0.169	14	0.0007	CDF	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)					
Extreme Value	Grubbs Extreme Value		2.24	2.586	0.2328	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)			
Between	0.5789436		0.5789436		1	15.66	0.0014	Significant Effect			
Error	0.5175547		0.03696819		14						
Total	1.096498				15						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)					
Variances	Variance Ratio F		2.13	8.885	0.3397	Equal Variances					
Distribution	Shapiro-Wilk W Normality		0.9566	0.8408	0.6016	Normal Distribution					
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%	
22800-024	8	0.5875	0.4177	0.7573	0.6	0.2	0.9	0.07181	34.57%	34.72%	
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%	
22800-024	8	0.8797	0.6922	1.067	0.8861	0.4636	1.249	0.07931	25.5%	30.19%	
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9			
22800-024	0.5	0.6	0.7	0.7	0.6	0.9	0.5	0.2			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249			
22800-024	0.7854	0.8861	0.9912	0.9912	0.8861	1.249	0.7854	0.4636			

CETIS Analytical Report

Report Date: 14 Jan-13 14:35 (p 2 of 27)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test								EnviroSystems, Inc.			
Analysis ID: 07-0034-1225		Endpoint: Proportion Survived			CETIS Version: CETISv1.8.6						
Analyzed: 14 Jan-13 14:19		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-023	04-1666-1117	16 Nov-12 08:06	17 Nov-12 13:05	21d 4h							
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000							
22800-023	Freshwater Sediment	Lower Passaic River Ecological R		UPRT22A; 22800-023							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	9.71%						
Equal Variance t Two-Sample Test											
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)		
22800-000		22800-023	1.79	1.761	0.137	14	0.0475	CDF	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)					
Extreme Value	Grubbs Extreme Value		1.936	2.586	0.6499	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)			
Between	0.07764589		0.07764589		1	3.204	0.0951	Non-Significant Effect			
Error	0.3392282		0.02423058		14						
Total	0.4168741				15						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)					
Variances	Variance Ratio F		1.052	8.885	0.9485	Equal Variances					
Distribution	Shapiro-Wilk W Normality		0.9339	0.8408	0.2805	Normal Distribution					
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%	
22800-023	8	0.8	0.7001	0.8999	0.8	0.6	1	0.04226	14.94%	11.11%	
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%	
22800-023	8	1.121	0.9891	1.253	1.107	0.8861	1.412	0.05573	14.06%	11.06%	
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9			
22800-023	0.9	0.6	1	0.7	0.8	0.8	0.8	0.8			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249			
22800-023	1.249	0.8861	1.412	0.9912	1.107	1.107	1.107	1.107			

CETIS Analytical Report

Report Date: 14 Jan-13 14:35 (p 3 of 27)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test								EnviroSystems, Inc.						
Analysis ID:	20-3319-6357	Endpoint: Proportion Survived				CETIS Version: CETISv1.8.6								
Analyzed:	14 Jan-13 14:19	Analysis: Nonparametric-Two Sample				Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project							
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse							
22800-022	08-0539-1503	15 Nov-12 12:25	17 Nov-12 13:05	22d										
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude							
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000										
22800-022	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21G; 22800-022										
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result								
Angular (Corrected)	NA	C > T	NA	NA	16.6%									
Wilcoxon Rank Sum Two-Sample Test														
Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision($\alpha:5\%$)					
22800-000		22800-022	43.5	NA	1	14	0.0016	Exact	Significant Effect					
Auxiliary Tests														
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)								
Extreme Value	Grubbs Extreme Value		2.547	2.586	0.0611	No Outliers Detected								
ANOVA Table														
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)						
Between	0.4755068		0.4755068		1	8.166	0.0127	Significant Effect						
Error	0.815179		0.05822707		14									
Total	1.290686				15									
Distributional Tests														
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)								
Variances	Variance Ratio F		3.931	8.885	0.0914	Equal Variances								
Distribution	Shapiro-Wilk W Normality		0.8146	0.8408	0.0043	Non-normal Distribution								
Proportion Survived Summary														
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect				
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%				
22800-022	8	0.625	0.3939	0.8561	0.8	0.1	0.8	0.09774	44.23%	30.56%				
Angular (Corrected) Transformed Summary														
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect				
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%				
22800-022	8	0.9154	0.6607	1.17	1.107	0.3218	1.107	0.1077	33.28%	27.36%				
Proportion Survived Detail														
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8						
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9						
22800-022	0.8	0.8	0.3	0.8	0.8	0.1	0.6	0.8						
Angular (Corrected) Transformed Detail														
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8						
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249						
22800-022	1.107	1.107	0.5796	1.107	1.107	0.3218	0.8861	1.107						

CETIS Analytical Report

Report Date: 14 Jan-13 14:35 (p 4 of 27)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 20-2522-8199 Analyzed: 14 Jan-13 14:19			Endpoint: Proportion Survived Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-021	09-5811-7655	15 Nov-12 11:29	17 Nov-12 13:05	22d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-021	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21F; 22800-021						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	11.6%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-021	2.499	1.761	0.158	14	0.0128	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)				
Extreme Value	Grubbs Extreme Value		2.168	2.586	0.3035	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	0.2013584		0.2013584		1	6.243	0.0255	Significant Effect		
Error	0.4515254		0.03225182		14					
Total	0.6528838				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		1.731	8.885	0.4862	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9425	0.8408	0.3814	Normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%
22800-021	8	0.725	0.5855	0.8645	0.75	0.5	1	0.05901	23.02%	19.44%
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%
22800-021	8	1.036	0.8668	1.205	1.049	0.7854	1.412	0.07149	19.52%	17.8%
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9		
22800-021	0.8	1	0.7	0.8	0.8	0.5	0.5	0.7		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249		
22800-021	1.107	1.412	0.9912	1.107	1.107	0.7854	0.7854	0.9912		

CETIS Analytical Report

Report Date: 14 Jan-13 14:35 (p 5 of 27)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 02-5354-2621 Analyzed: 14 Jan-13 14:20			Endpoint: Proportion Survived Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-020	07-2784-0432	15 Nov-12 10:52	17 Nov-12 13:05	22d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-020	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21E; 22800-020						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	8.89%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-020	4.532	1.771	0.128	13	0.0003	CDF	Significant Effect	
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat		P-Value	Decision(α :5%)	
Between	0.3973943		0.3973943		1	20.54		0.0006	Significant Effect	
Error	0.2515694		0.01935149		13					
Total	0.6489637				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		1.643	10.79	0.5618	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9276	0.8328	0.2513	Normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%
22800-020	7	0.6429	0.538	0.7477	0.7	0.5	0.8	0.04286	17.64%	28.57%
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%
22800-020	7	0.9339	0.823	1.045	0.9912	0.7854	1.107	0.04531	12.84%	25.89%
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9		
22800-020	0.8	0.5	Outlier	0.5	0.7	0.7	0.7	0.6		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249		
22800-020	1.107	0.7854	0.7854	0.9912	0.9912	0.9912	0.8861			

CETIS Analytical Report

Report Date: 14 Jan-13 14:35 (p 6 of 27)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test								EnviroSystems, Inc.				
Analysis ID:	10-6261-7734	Endpoint:	Proportion Survived				CETIS Version:	CETISv1.8.6				
Analyzed:	14 Jan-13 14:20	Analysis:	Parametric-Two Sample				Official Results:	Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project					
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse					
22800-020	07-2784-0432	15 Nov-12 10:52	17 Nov-12 13:05	22d 1h								
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude					
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000									
22800-020	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21E; 22800-020									
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result						
Angular (Corrected)	NA	C > T	NA	NA	13.5%							
Equal Variance t Two-Sample Test												
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)			
22800-000		22800-020	3.96	1.761	0.179	14	0.0007	CDF	Significant Effect			
Auxiliary Tests												
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)						
Extreme Value	Grubbs Extreme Value		2.725	2.586	0.0228	Outlier Detected						
ANOVA Table												
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α :5%)					
Between	0.6489303		0.6489303	1	15.68	0.0014	Significant Effect					
Error	0.5794848		0.04139178	14								
Total	1.228415			15								
Distributional Tests												
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)						
Variances	Variance Ratio F		2.505	8.885	0.2487	Equal Variances						
Distribution	Shapiro-Wilk W Normality		0.8689	0.8408	0.0261	Normal Distribution						
Proportion Survived Summary												
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect		
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%		
22800-020	8	0.575	0.3921	0.7579	0.65	0.1	0.8	0.07734	38.05%	36.11%		
Angular (Corrected) Transformed Summary												
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect		
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%		
22800-020	8	0.8574	0.6541	1.061	0.9386	0.3218	1.107	0.086	28.37%	31.96%		
Proportion Survived Detail												
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8				
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9				
22800-020	0.8	0.5	0.1	0.5	0.7	0.7	0.7	0.6				
Angular (Corrected) Transformed Detail												
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8				
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249				
22800-020	1.107	0.7854	0.3218	0.7854	0.9912	0.9912	0.9912	0.8861				

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 19-3754-2078 Analyzed: 14 Jan-13 14:20			Endpoint: Proportion Survived Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-019	07-8610-6905	15 Nov-12 10:08	17 Nov-12 13:05	22d 2h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-019	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21D; 22800-019						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	11.1%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-019	2.953	1.771	0.153	13	0.0056	CDF	Significant Effect	
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat		P-Value	Decision(α :5%)	
Between	0.2423107		0.2423107		1	8.718		0.0112	Significant Effect	
Error	0.3613357		0.02779505		13					
Total	0.6036464				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		1.383	9.155	0.6759	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9356	0.8328	0.3304	Normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%
22800-019	7	0.7	0.5587	0.8413	0.7	0.5	0.9	0.05774	21.82%	22.22%
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%
22800-019	7	1.005	0.8383	1.173	0.9912	0.7854	1.249	0.06831	17.98%	20.22%
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9		
22800-019	0.9	0.6	0.5	0.9	0.6	0.7	Outlier	0.7		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249		
22800-019	1.249	0.8861	0.7854	1.249	0.8861	0.9912	0.9912			

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test								EnviroSystems, Inc.			
Analysis ID: 07-6932-8220 Analyzed: 14 Jan-13 14:20				Endpoint: Proportion Survived Analysis: Parametric-Two Sample				CETIS Version: CETISv1.8.6 Official Results: Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-019	07-8610-6905	15 Nov-12 10:08	17 Nov-12 13:05	22d 2h							
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000							
22800-019	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21D; 22800-019							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	16.1%						
Equal Variance t Two-Sample Test											
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)		
22800-000		22800-019	2.901	1.761	0.207	14	0.0058	CDF	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)					
Extreme Value	Grubbs Extreme Value		2.64	2.586	0.0374	Outlier Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)			
Between	0.4630065		0.4630065		1	8.415	0.0116	Significant Effect			
Error	0.770317		0.05502265		14						
Total	1.233324				15						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)					
Variances	Variance Ratio F		3.659	8.885	0.1085	Equal Variances					
Distribution	Shapiro-Wilk W Normality		0.9169	0.8408	0.1505	Normal Distribution					
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%	
22800-019	8	0.625	0.4119	0.8381	0.65	0.1	0.9	0.09014	40.79%	30.56%	
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%	
22800-019	8	0.92	0.6742	1.166	0.9386	0.3218	1.249	0.1039	31.96%	27.0%	
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9			
22800-019	0.9	0.6	0.5	0.9	0.6	0.7	0.1	0.7			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249			
22800-019	1.249	0.8861	0.7854	1.249	0.8861	0.9912	0.3218	0.9912			

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test								EnviroSystems, Inc.		
Analysis ID: 17-4673-3772 Analyzed: 14 Jan-13 14:20				Endpoint: Proportion Survived Analysis: Parametric-Two Sample				CETIS Version: CETISv1.8.6 Official Results: Yes		
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project			
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse			
22800-018	09-1843-1107	15 Nov-12 09:17	17 Nov-12 13:05	22d 3h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-018	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21C; 22800-018						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	7.46%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-018	2.849	1.761	0.111	14	0.0064	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value		Decision(α :5%)			
Extreme Value	Grubbs Extreme Value		2.219	2.586	0.2522		No Outliers Detected			
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat		P-Value	Decision(α :5%)	
Between	0.1278743		0.1278743		1	8.118		0.0129	Significant Effect	
Error	0.2205154		0.0157511		14					
Total	0.3483897				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value		Decision(α :1%)			
Variances	Variance Ratio F		2.996	8.885	0.1710		Equal Variances			
Distribution	Shapiro-Wilk W Normality		0.9283	0.8408	0.2293		Normal Distribution			
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%
22800-018	8	0.775	0.7159	0.8341	0.8	0.7	0.9	0.025	9.12%	13.89%
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%
22800-018	8	1.081	1.007	1.156	1.107	0.9912	1.249	0.03139	8.21%	14.19%
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9		
22800-018	0.9	0.7	0.7	0.8	0.8	0.7	0.8	0.8		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249		
22800-018	1.249	0.9912	0.9912	1.107	1.107	0.9912	1.107	1.107		

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test								EnviroSystems, Inc.			
Analysis ID:	02-8797-3406	Endpoint:	Proportion Survived				CETIS Version:	CETISv1.8.6			
Analyzed:	14 Jan-13 14:20	Analysis:	Parametric-Two Sample				Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-017	03-2230-4522	15 Nov-12 08:19	17 Nov-12 13:05	22d 4h							
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000								
22800-017	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21B; 22800-017								
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	12.6%						
Equal Variance t Two-Sample Test											
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)		
22800-000		22800-017	8.727	1.761	0.169	14	<0.0001	CDF	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)					
Extreme Value	Grubbs Extreme Value		2.501	2.586	0.0764	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)			
Between	2.810941		2.810941		1	76.15	<0.0001	Significant Effect			
Error	0.5167634		0.03691167		14						
Total	3.327704				15						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)					
Variances	Variance Ratio F		2.126	8.885	0.3411	Equal Variances					
Distribution	Shapiro-Wilk W Normality		0.9238	0.8408	0.1942	Normal Distribution					
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%	
22800-017	8	0.1875	0.0299	0.3451	0.1	0	0.6	0.06665	100.5%	79.17%	
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%	
22800-017	8	0.4219	0.2346	0.6092	0.3218	0.1588	0.8861	0.07922	53.11%	66.52%	
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9			
22800-017	0.2	0.6	0.3	0.1	0	0.1	0.1	0.1			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249			
22800-017	0.4636	0.8861	0.5796	0.3218	0.1588	0.3218	0.3218	0.3218			

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.				
Analysis ID:	20-5223-2100	Endpoint:	Proportion Survived				CETIS Version:	CETISv1.8.6			
Analyzed:	14 Jan-13 14:20	Analysis:	Parametric-Two Sample				Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-016	12-7040-7515	14 Nov-12 13:52	17 Nov-12 13:05	22d 22h							
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000								
22800-016	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21A; 22800-016								
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	11.7%						
Equal Variance t Two-Sample Test											
Sample Code	vs Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)			
22800-000	22800-016	2.951	1.761	0.16	14	0.0053	CDF	Significant Effect			
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :5%)						
Extreme Value	Grubbs Extreme Value	1.762	2.586	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)					
Between	0.2856216	0.2856216	1	8.711	0.0105	Significant Effect					
Error	0.4590504	0.03278931	14								
Total	0.7446719		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :1%)						
Variances	Variance Ratio F	1.777	8.885	0.4660	Equal Variances						
Distribution	Shapiro-Wilk W Normality	0.9449	0.8408	0.4140	Normal Distribution						
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378			
22800-016	8	0.6875	0.5364	0.8386	0.7	0.4	0.9	0.06391			
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433			
22800-016	8	0.993	0.8217	1.164	0.9912	0.6847	1.249	0.07242			
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9			
22800-016	0.6	0.8	0.9	0.4	0.5	0.9	0.7	0.7			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249			
22800-016	0.8861	1.107	1.249	0.6847	0.7854	1.249	0.9912	0.9912			

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test								EnviroSystems, Inc.			
Analysis ID: 06-2182-0654		Endpoint: Proportion Survived			CETIS Version: CETISv1.8.6						
Analyzed: 14 Jan-13 14:20		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-015	07-6377-7783	14 Nov-12 12:52	17 Nov-12 13:05	22d 23h							
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000							
22800-015	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20G; 22800-015							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	10.1%						
Equal Variance t Two-Sample Test											
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)		
22800-000		22800-015	3.545	1.761	0.142	14	0.0016	CDF	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α :5%)				
Extreme Value	Grubbs Extreme Value		1.763	2.586	1.0000		No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat		P-Value	Decision(α :5%)		
Between	0.3260526		0.3260526		1	12.56		0.0032	Significant Effect		
Error	0.3633268		0.02595192		14						
Total	0.6893795				15						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α :1%)				
Variances	Variance Ratio F		1.198	8.885	0.8180		Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9513	0.8408	0.5108		Normal Distribution				
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%	
22800-015	8	0.675	0.5506	0.7994	0.65	0.5	0.9	0.05261	22.05%	25.0%	
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%	
22800-015	8	0.9747	0.8341	1.115	0.9386	0.7854	1.249	0.05946	17.26%	22.66%	
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9			
22800-015	0.8	0.6	0.7	0.8	0.5	0.9	0.5	0.6			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249			
22800-015	1.107	0.8861	0.9912	1.107	0.7854	1.249	0.7854	0.8861			

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID:	00-6578-8218	Endpoint: Proportion Survived			CETIS Version: CETISv1.8.6					
Analyzed:	14 Jan-13 14:20	Analysis: Nonparametric-Two Sample			Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project			
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse			
22800-014	12-2328-2385	14 Nov-12 11:49	17 Nov-12 13:05	23d 0h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-014	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20F; 22800-014						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	6.77%					
Wilcoxon Rank Sum Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type		
22800-000		22800-014	36	NA	0	14	<0.0001	Exact		
Decision(α :5%)										
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)				
Extreme Value	Grubbs Extreme Value		2.399	2.586	0.1216	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	4.674545		4.674545		1	347.1	<0.0001	Significant Effect		
Error	0.1885661		0.01346901		14					
Total	4.863111				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		7.114	8.885	0.0190	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8105	0.8408	0.0038	Non-normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err		
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378		
22800-014	8	0.0125	0	0.04206	0	0	0.1	0.0125		
CV% 11.88% 0.0%										
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err		
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433		
22800-014	8	0.1792	0.131	0.2273	0.1588	0.1588	0.3218	0.02037		
CV% 12.2% 0.0%										
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9		
22800-014	0	0	0	0	0	0	0	0.1		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249		
22800-014	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0.3218		

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test								EnviroSystems, Inc.			
Analysis ID: 12-3038-1195 Analyzed: 14 Jan-13 14:20				Endpoint: Proportion Survived Analysis: Parametric-Two Sample				CETIS Version: CETISv1.8.6 Official Results: Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-013	13-4098-0624	14 Nov-12 11:12	17 Nov-12 13:05	23d 1h							
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000							
22800-013	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20E; 22800-013							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	9.43%						
Equal Variance t Two-Sample Test											
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)		
22800-000		22800-013	3.991	1.761	0.134	14	0.0007	CDF	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)					
Extreme Value	Grubbs Extreme Value		1.854	2.586	0.8249	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)			
Between	0.3678233		0.3678233		1	15.93	0.0013	Significant Effect			
Error	0.3233542		0.02309673		14						
Total	0.6911776				15						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)					
Variances	Variance Ratio F		1.046	8.885	0.9540	Equal Variances					
Distribution	Shapiro-Wilk W Normality		0.8672	0.8408	0.0247	Normal Distribution					
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%	
22800-013	8	0.6625	0.5448	0.7802	0.65	0.4	0.8	0.04978	21.25%	26.39%	
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%	
22800-013	8	0.9569	0.8313	1.083	0.9386	0.6847	1.107	0.05312	15.7%	24.06%	
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9			
22800-013	0.6	0.6	0.8	0.7	0.4	0.8	0.8	0.6			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249			
22800-013	0.8861	0.8861	1.107	0.9912	0.6847	1.107	1.107	0.8861			

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.				
Analysis ID:	04-3594-0779	Endpoint:	Proportion Survived				CETIS Version:	CETISv1.8.6			
Analyzed:	14 Jan-13 14:20	Analysis:	Parametric-Two Sample				Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-012	08-8087-7260	14 Nov-12 09:14	17 Nov-12 13:05	23d 3h							
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000								
22800-012	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20D; 22800-012								
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	18.3%						
Equal Variance t Two-Sample Test											
Sample Code	vs Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)			
22800-000	22800-012	1.44	1.761	0.23	14	0.0859	CDF	Non-Significant Effect			
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)						
Extreme Value	Grubbs Extreme Value	1.956	2.586	0.6112	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)					
Between	0.1409594	0.1409594	1	2.073	0.1719	Non-Significant Effect					
Error	0.9518456	0.06798898	14								
Total	1.092805		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:1\%$)						
Variances	Variance Ratio F	4.757	8.885	0.0567	Equal Variances						
Distribution	Shapiro-Wilk W Normality	0.9121	0.8408	0.1260	Normal Distribution						
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378			
22800-012	8	0.7375	0.4971	0.9779	0.85	0.3	1	0.1017			
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433			
22800-012	8	1.072	0.7922	1.353	1.178	0.5796	1.412	0.1185			
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9			
22800-012	1	0.9	0.7	0.9	0.3	1	0.8	0.3			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249			
22800-012	1.412	1.249	0.9912	1.249	0.5796	1.412	1.107	0.5796			

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 13-7401-3199 Analyzed: 14 Jan-13 14:20			Endpoint: Proportion Survived Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-011	06-7617-7021	14 Nov-12 08:15	17 Nov-12 13:05	23d 4h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-011	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20C; 22800-011						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	15.0%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type		
22800-000		22800-011	1.584	1.771	0.195	13	0.0686	CDF		
Non-Significant Effect										
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.956	2.548	0.5595	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.113592		0.113592		1	2.508	0.1373	Non-Significant Effect		
Error	0.5887845		0.04529112		13					
Total	0.7023765				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.988	9.155	0.1781	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9656	0.8328	0.7878	Normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err		
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378		
22800-011	7	0.7571	0.5584	0.9559	0.8	0.4	1	0.08123		
11.88% CV% 0.0% %Effect										
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err		
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433		
22800-011	7	1.086	0.8401	1.331	1.107	0.6847	1.412	0.1004		
12.2% CV% 0.0% %Effect										
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9		
22800-011	0.7	0.8	0.4	0.8	1	1	0.6			
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249		
22800-011	0.9912	1.107	0.6847	1.107	1.412	1.412	0.8861			

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 03-9188-1093 Analyzed: 14 Jan-13 14:20			Endpoint: Proportion Survived Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-010	00-6504-4240	13 Nov-12 14:41	17 Nov-12 13:05	23d 21h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-010	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20B; 22800-010						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	10.1%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-010	1.024	1.771	0.142	13	0.1624	CDF	Non-Significant Effect	
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat		P-Value	Decision(α :5%)	
Between	0.02498842		0.02498842		1	1.048		0.3247	Non-Significant Effect	
Error	0.3100726		0.02385174		13					
Total	0.335061				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		1.021	9.155	0.9629	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.95	0.8328	0.5241	Normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%
22800-010	7	0.8429	0.738	0.9477	0.9	0.7	1	0.04286	13.45%	6.35%
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%
22800-010	7	1.178	1.035	1.322	1.249	0.9912	1.412	0.05871	13.18%	6.49%
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9		
22800-010	0.7	1	0.9	0.8	0.7	0.9	0.9	Outlier		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249		
22800-010	0.9912	1.412	1.249	1.107	0.9912	1.249	1.249			

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Hyalella 28-d Survival and Growth Sediment Test								EnviroSystems, Inc.			
Analysis ID: 12-8374-2106 Analyzed: 14 Jan-13 14:20				Endpoint: Proportion Survived Analysis: Nonparametric-Two Sample				CETIS Version: CETISv1.8.6 Official Results: Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-010	00-6504-4240	13 Nov-12 14:41	17 Nov-12 13:05	23d 21h							
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000							
22800-010	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20B; 22800-010							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	18.3%						
Wilcoxon Rank Sum Two-Sample Test											
Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision($\alpha:5\%$)		
22800-000		22800-010	55.5	NA	4	14	0.1088	Exact	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)					
Extreme Value	Grubbs Extreme Value		2.975	2.586	0.0039	Outlier Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)			
Between	0.1427187		0.1427187		1	2.098	0.1695	Non-Significant Effect			
Error	0.9521503		0.06801073		14						
Total	1.094869				15						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)					
Variances	Variance Ratio F		4.759	8.885	0.0567	Equal Variances					
Distribution	Shapiro-Wilk W Normality		0.836	0.8408	0.0085	Non-normal Distribution					
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%	
22800-010	8	0.75	0.5135	0.9865	0.85	0.1	1	0.1	37.71%	16.67%	
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%	
22800-010	8	1.071	0.791	1.352	1.178	0.3218	1.412	0.1185	31.3%	14.99%	
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9			
22800-010	0.7	1	0.9	0.8	0.7	0.9	0.9	0.1			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249			
22800-010	0.9912	1.412	1.249	1.107	0.9912	1.249	1.249	0.3218			

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Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.				
Analysis ID:	16-8146-9688	Endpoint:	Proportion Survived				CETIS Version:	CETISv1.8.6			
Analyzed:	14 Jan-13 14:20	Analysis:	Parametric-Two Sample				Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-009	08-6088-6776	13 Nov-12 13:30	17 Nov-12 13:05	23d 22h							
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000								
22800-009	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20A; 22800-009								
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	19.6%						
Equal Variance t Two-Sample Test											
Sample Code	vs Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)			
22800-000	22800-009	2.688	1.761	0.243	14	0.0088	CDF	Significant Effect			
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :5%)						
Extreme Value	Grubbs Extreme Value	2.736	2.586	0.0214	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)					
Between	0.5513506	0.5513506	1	7.225	0.0177	Significant Effect					
Error	1.068311	0.07630792	14								
Total	1.619661		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :1%)						
Variances	Variance Ratio F	5.462	8.885	0.0395	Equal Variances						
Distribution	Shapiro-Wilk W Normality	0.9066	0.8408	0.1024	Normal Distribution						
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378			
22800-009	8	0.6	0.3472	0.8528	0.65	0	0.9	0.1069			
CV% %Effect											
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433			
22800-009	8	0.8889	0.5887	1.189	0.9386	0.1588	1.249	0.127			
CV% %Effect											
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9			
22800-009	0.5	0.7	0.8	0.9	0.4	0.6	0	0.9			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249			
22800-009	0.7854	0.9912	1.107	1.249	0.6847	0.8861	0.1588	1.249			

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test								EnviroSystems, Inc.			
Analysis ID: 18-7185-1786		Endpoint: Proportion Survived			CETIS Version: CETISv1.8.6						
Analyzed: 14 Jan-13 14:21		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-008	11-9606-6366	13 Nov-12 11:59	17 Nov-12 13:05	24d 0h							
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000							
22800-008	Freshwater Sediment	Lower Passaic River Ecological R		UPTR19M; 22800-008							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	13.6%						
Equal Variance t Two-Sample Test											
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)		
22800-000		22800-008	5.336	1.761	0.181	14	<0.0001	CDF	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)					
Extreme Value	Grubbs Extreme Value		1.974	2.586	0.5792	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)			
Between	1.1979		1.1979		1	28.47	0.0001	Significant Effect			
Error	0.5891035		0.04207882		14						
Total	1.787004				15						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)					
Variances	Variance Ratio F		2.563	8.885	0.2375	Equal Variances					
Distribution	Shapiro-Wilk W Normality		0.9509	0.8408	0.5041	Normal Distribution					
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%	
22800-008	8	0.4375	0.2482	0.6268	0.45	0.1	0.7	0.08004	51.75%	51.39%	
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%	
22800-008	8	0.7129	0.5072	0.9186	0.7351	0.3218	0.9912	0.08699	34.51%	43.43%	
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9			
22800-008	0.2	0.4	0.1	0.6	0.3	0.7	0.7	0.5			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249			
22800-008	0.4636	0.6847	0.3218	0.8861	0.5796	0.9912	0.9912	0.7854			

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test								EnviroSystems, Inc.			
Analysis ID: 11-6178-5146 Analyzed: 14 Jan-13 14:21				Endpoint: Proportion Survived Analysis: Parametric-Two Sample				CETIS Version: CETISv1.8.6 Official Results: Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-007	04-8067-7422	13 Nov-12 10:55	17 Nov-12 13:05	24d 1h							
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000							
22800-007	Freshwater Sediment	Lower Passaic River Ecological R		UPRT19L; 22800-007							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	13.3%						
Equal Variance t Two-Sample Test											
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)		
22800-000		22800-007	3.045	1.761	0.177	14	0.0044	CDF	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)					
Extreme Value	Grubbs Extreme Value		1.928	2.586	0.6658	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)			
Between	0.3747218		0.3747218		1	9.271	0.0087	Significant Effect			
Error	0.565878		0.04041986		14						
Total	0.9405998				15						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)					
Variances	Variance Ratio F		2.423	8.885	0.2658	Equal Variances					
Distribution	Shapiro-Wilk W Normality		0.9584	0.8408	0.6334	Normal Distribution					
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%	
22800-007	8	0.65	0.4713	0.8287	0.65	0.3	0.9	0.07559	32.89%	27.78%	
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%	
22800-007	8	0.9541	0.7541	1.154	0.9386	0.5796	1.249	0.08457	25.07%	24.29%	
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9			
22800-007	0.9	0.8	0.7	0.5	0.5	0.6	0.3	0.9			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249			
22800-007	1.249	1.107	0.9912	0.7854	0.7854	0.8861	0.5796	1.249			

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.				
Analysis ID:	09-1010-3918	Endpoint:	Proportion Survived				CETIS Version:	CETISv1.8.6			
Analyzed:	14 Jan-13 14:21	Analysis:	Parametric-Two Sample				Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-006	15-2324-2159	13 Nov-12 09:46	17 Nov-12 13:05	24d 2h							
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000								
22800-006	Freshwater Sediment	Lower Passaic River Ecological R	UPRT19K; 22800-006								
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	9.45%						
Equal Variance t Two-Sample Test											
Sample Code	vs Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)			
22800-000	22800-006	0.2754	1.761	0.134	14	0.3935	CDF	Non-Significant Effect			
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)						
Extreme Value	Grubbs Extreme Value	1.828	2.586	0.8865	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)					
Between	0.001759844	0.001759844	1	0.07586	0.7870	Non-Significant Effect					
Error	0.32477	0.02319786	14								
Total	0.3265299		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:1\%$)						
Variances	Variance Ratio F	1.037	8.885	0.9631	Equal Variances						
Distribution	Shapiro-Wilk W Normality	0.876	0.8408	0.0336	Normal Distribution						
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378			
22800-006	8	0.8875	0.8046	0.9704	0.85	0.8	1	0.03504			
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433			
22800-006	8	1.239	1.113	1.365	1.178	1.107	1.412	0.05336			
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9			
22800-006	1	1	0.8	0.8	0.8	1	0.8	0.9			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249			
22800-006	1.412	1.412	1.107	1.107	1.107	1.412	1.107	1.249			

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test								EnviroSystems, Inc.			
Analysis ID: 20-3066-9482		Endpoint: Proportion Survived			CETIS Version: CETISv1.8.6						
Analyzed: 14 Jan-13 14:21		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code		Sample ID		Sample Date	Receive Date	Sample Age	Client Name	Project			
22800-000		02-2935-5787		28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse			
22800-005		11-3775-7426		13 Nov-12 08:20	17 Nov-12 13:05	24d 4h					
Sample Code		Material Type		Sample Source		Station Location		Latitude	Longitude		
22800-000		Laboratory Control S		Lower Passaic River Ecological R		Lab Control; 22800-000					
22800-005		Freshwater Sediment		Lower Passaic River Ecological R		UPRT19J; 22800-005					
Data Transform		Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)		NA	C > T	NA	NA	6.24%					
Wilcoxon Rank Sum Two-Sample Test											
Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α :5%)		
22800-000		22800-005	36	NA	0	14	<0.0001	Exact	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)					
Extreme Value	Grubbs Extreme Value		2.563	2.586	0.0563	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)			
Between	4.852382		4.852382		1	410.9	<0.0001	Significant Effect			
Error	0.1653267		0.01180905		14						
Total	5.017709				15						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)					
Variances	Mod Levene Equality of Variance		10.22	8.862	0.0065	Unequal Variances					
Variances	Levene Equality of Variance		11.79	8.862	0.0040	Unequal Variances					
Distribution	Shapiro-Wilk W Normality		0.7751	0.8408	0.0013	Non-normal Distribution					
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%	
22800-005	8	0	0	0	0	0	0	0		100.0%	
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%	
22800-005	8	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0	0.0%	87.4%	
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9			
22800-005	0	0	0	0	0	0	0	0			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249			
22800-005	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588			

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test								EnviroSystems, Inc.		
Analysis ID: 14-4724-9622 Analyzed: 14 Jan-13 14:21				Endpoint: Proportion Survived Analysis: Parametric-Two Sample				CETIS Version: CETISv1.8.6 Official Results: Yes		
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project			
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse			
22800-004	08-4834-2931	12 Nov-12 14:37	17 Nov-12 13:05	24d 21h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-004	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18K; 22800-004						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	11.1%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-004	2.235	1.761	0.153	14	0.0211	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value		Decision(α :5%)			
Extreme Value	Grubbs Extreme Value		2.059	2.586	0.4420		No Outliers Detected			
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat		P-Value	Decision(α :5%)	
Between	0.1514657		0.1514657		1	4.993		0.0423	Significant Effect	
Error	0.424663		0.03033307		14					
Total	0.5761287				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value		Decision(α :1%)			
Variances	Variance Ratio F		1.569	8.885	0.5670		Equal Variances			
Distribution	Shapiro-Wilk W Normality		0.9563	0.8408	0.5955		Normal Distribution			
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%
22800-004	8	0.75	0.6236	0.8764	0.75	0.6	1	0.05345	20.16%	16.67%
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%
22800-004	8	1.066	0.9047	1.227	1.049	0.8861	1.412	0.06805	18.06%	15.44%
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9		
22800-004	0.8	0.6	0.9	1	0.8	0.6	0.7	0.6		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249		
22800-004	1.107	0.8861	1.249	1.412	1.107	0.8861	0.9912	0.8861		

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.				
Analysis ID:	15-2012-0472	Endpoint:	Proportion Survived				CETIS Version:	CETISv1.8.6			
Analyzed:	14 Jan-13 14:21	Analysis:	Parametric-Two Sample				Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-003	11-7795-6459	12 Nov-12 13:21	17 Nov-12 13:05	24d 23h							
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000								
22800-003	Freshwater Sediment	Lower Passaic River Ecological R	UPRT18J; 22800-003								
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	7.28%						
Equal Variance t Two-Sample Test											
Sample Code	vs Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)			
22800-000	22800-003	0.1383	1.761	0.108	14	0.4460	CDF	Non-Significant Effect			
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)						
Extreme Value	Grubbs Extreme Value	2.263	2.586	0.2130	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)					
Between	0.0002894379	0.0002894379	1	0.01912	0.8920	Non-Significant Effect					
Error	0.2119653	0.01514038	14								
Total	0.2122547		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:1\%$)						
Variances	Variance Ratio F	3.545	8.885	0.1169	Equal Variances						
Distribution	Shapiro-Wilk W Normality	0.855	0.8408	0.0162	Normal Distribution						
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378			
22800-003	8	0.9	0.8553	0.9447	0.9	0.8	1	0.0189			
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433			
22800-003	8	1.252	1.183	1.32	1.249	1.107	1.412	0.02886			
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9			
22800-003	0.8	1	0.9	0.9	0.9	0.9	0.9	0.9			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249			
22800-003	1.107	1.412	1.249	1.249	1.249	1.249	1.249	1.249			

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test								EnviroSystems, Inc.				
Analysis ID:	01-4268-3061	Endpoint:	Proportion Survived				CETIS Version:	CETISv1.8.6				
Analyzed:	14 Jan-13 14:21	Analysis:	Parametric-Two Sample				Official Results:	Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project					
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse					
22800-002	12-7608-5227	12 Nov-12 12:17	17 Nov-12 13:05	25d								
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude					
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000									
22800-002	Freshwater Sediment	Lower Passaic River Ecological R	UPRT18H; 22800-002									
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result						
Angular (Corrected)	NA	C > T	NA	NA	10.5%							
Equal Variance t Two-Sample Test												
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)			
22800-000		22800-002	0.8332	1.761	0.146	14	0.2094	CDF	Non-Significant Effect			
Auxiliary Tests												
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)						
Extreme Value	Grubbs Extreme Value		1.907	2.586	0.7074	No Outliers Detected						
ANOVA Table												
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)					
Between	0.01903323		0.01903323	1	0.6942	0.4187	Non-Significant Effect					
Error	0.3838323		0.02741659	14								
Total	0.4028655			15								
Distributional Tests												
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)						
Variances	Variance Ratio F		1.322	8.885	0.7222	Equal Variances						
Distribution	Shapiro-Wilk W Normality		0.9449	0.8408	0.4133	Normal Distribution						
Proportion Survived Summary												
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect		
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%		
22800-002	8	0.85	0.7405	0.9595	0.85	0.6	1	0.04629	15.4%	5.56%		
Angular (Corrected) Transformed Summary												
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect		
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%		
22800-002	8	1.191	1.043	1.339	1.178	0.8861	1.412	0.06247	14.83%	5.47%		
Proportion Survived Detail												
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8				
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9				
22800-002	0.8	0.6	1	1	0.8	0.9	0.9	0.8				
Angular (Corrected) Transformed Detail												
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8				
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249				
22800-002	1.107	0.8861	1.412	1.412	1.107	1.249	1.249	1.107				

CETIS Analytical Report

Report Date: 14 Jan-13 14:37 (p 27 of 27)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test								EnviroSystems, Inc.			
Analysis ID: 20-7537-5661		Endpoint: Proportion Survived			CETIS Version: CETISv1.8.6						
Analyzed: 14 Jan-13 14:21		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-001	16-4551-8127	12 Nov-12 10:13	17 Nov-12 13:05	25d 2h							
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000							
22800-001	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18I; 22800-001							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	17.0%						
Equal Variance t Two-Sample Test											
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)		
22800-000		22800-001	1.712	1.761	0.217	14	0.0545	CDF	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)					
Extreme Value	Grubbs Extreme Value		2.464	2.586	0.0910	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)			
Between	0.1774976		0.1774976		1	2.93	0.1090	Non-Significant Effect			
Error	0.848123		0.06058021		14						
Total	1.025621				15						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)					
Variances	Variance Ratio F		4.13	8.885	0.0810	Equal Variances					
Distribution	Shapiro-Wilk W Normality		0.9388	0.8408	0.3350	Normal Distribution					
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	0.9	0.8106	0.9894	0.9	0.7	1	0.0378	11.88%	0.0%	
22800-001	8	0.725	0.5072	0.9428	0.7	0.2	1	0.0921	35.93%	19.44%	
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	1.26	1.132	1.389	1.249	0.9912	1.412	0.05433	12.2%	0.0%	
22800-001	8	1.05	0.7884	1.311	0.9912	0.4636	1.412	0.1104	29.76%	16.72%	
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	0.9	1	0.7	1	1	0.8	0.9			
22800-001	1	0.7	0.7	0.9	0.7	1	0.6	0.2			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.249	1.412	0.9912	1.412	1.412	1.107	1.249			
22800-001	1.412	0.9912	0.9912	1.249	0.9912	1.412	0.8861	0.4636			

**CETIS Analytical Reports
Dry Weight Comparisons**

**in support of the Ecological Risk Assessment for
Lower Passaic River Remedial Investigation
Purchase Order Number 2012-0042**

CETIS Analytical Report

Report Date: 14 Jan-13 14:33 (p 1 of 24)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 17-1062-7067 Analyzed: 14 Jan-13 14:19			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-024	09-8169-6091	16 Nov-12 09:09	17 Nov-12 13:05	21d 3h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-024	Freshwater Sediment	Lower Passaic River Ecological R		UPRT22B; 22800-024						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	16.7%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-024	2.811	1.761	0.104	14	0.0069	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.13	2.586	0.3471	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.1110424		0.1110424		1	7.903	0.0139	Significant Effect		
Error	0.1967025		0.01405018		14					
Total	0.3077449				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.397	8.885	0.6699	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9214	0.8408	0.1778	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-024	8	0.4581	0.3511	0.565	0.4536	0.3233	0.702	0.04525	27.94%	26.67%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-024	0.702	0.4883	0.5543	0.4671	0.3633	0.3233	0.326	0.44		

CETIS Analytical Report

Report Date: 14 Jan-13 14:33 (p 2 of 24)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 09-5069-1166 Analyzed: 14 Jan-13 14:19			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-023	04-1666-1117	16 Nov-12 08:06	17 Nov-12 13:05	21d 4h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-023	Freshwater Sediment	Lower Passaic River Ecological R		UPRT22A; 22800-023						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	13.0%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-023	5.838	1.761	0.081	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.62	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.2911285		0.2911285		1	34.08	<0.0001	Significant Effect		
Error	0.1195944		0.008542459		14					
Total	0.410723				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.185	8.885	0.3241	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9113	0.8408	0.1220	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-023	8	0.3549	0.2937	0.4161	0.3579	0.2763	0.475	0.02589	20.64%	43.19%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-023	0.4344	0.28	0.475	0.3571	0.2863	0.3713	0.3587	0.2763		

CETIS Analytical Report

Report Date: 14 Jan-13 14:33 (p 3 of 24)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 11-7531-1148 Analyzed: 14 Jan-13 14:19			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-022	08-0539-1503	15 Nov-12 12:25	17 Nov-12 13:05	22d						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-022	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21G; 22800-022						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	13.2%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-022	5.424	1.771	0.083	13	<0.0001	CDF	Significant Effect	
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	0.2393075		0.2393075		1	29.42	0.0001	Significant Effect		
Error	0.1057415		0.008133962		13					
Total	0.345049				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		2.968	10.79	0.2061	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9219	0.8328	0.2056	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-022	7	0.3715	0.3134	0.4296	0.3625	0.2883	0.4825	0.02375	16.92%	40.53%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-022	0.385	0.4825	0.3333	0.4112	0.3375	Outlier	0.2883	0.3625		

CETIS Analytical Report

Report Date: 14 Jan-13 14:33 (p 4 of 24)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 21-2293-4044 Analyzed: 14 Jan-13 14:19			Endpoint: Mean Dry Weight-mg Analysis: Nonparametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-022	08-0539-1503	15 Nov-12 12:25	17 Nov-12 13:05	22d						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-022	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21G; 22800-022						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	46.7%					
Wilcoxon Rank Sum Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-022	45	NA	0	14	0.0074	Exact	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		3.496	2.586	<0.0001	Outlier Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.03486953		0.03486953		1	0.3178	0.5818	Non-Significant Effect		
Error	1.535997		0.1097141		14					
Total	1.570867				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		17.72	8.885	0.0012	Unequal Variances				
Distribution	Shapiro-Wilk W Normality		0.6033	0.8408	<0.0001	Non-normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-022	8	0.5313	0.1503	0.9123	0.3737	0.2883	1.65	0.1611	85.78%	14.95%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-022	0.385	0.4825	0.3333	0.4112	0.3375	1.65	0.2883	0.3625		

CETIS Analytical Report

Report Date: 14 Jan-13 14:33 (p 5 of 24)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 18-2888-8758 Analyzed: 14 Jan-13 14:19			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-021	09-5811-7655	15 Nov-12 11:29	17 Nov-12 13:05	22d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-021	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21F; 22800-021						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	12.9%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-021	6.138	1.761	0.081	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.631	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.3177192		0.3177192		1	37.67	<0.0001	Significant Effect		
Error	0.1180807		0.008434333		14					
Total	0.4357998				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.277	8.885	0.2999	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9093	0.8408	0.1134	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-021	8	0.3428	0.2829	0.4028	0.3637	0.2488	0.4529	0.02537	20.93%	45.12%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-021	0.3787	0.389	0.3486	0.3787	0.2488	0.256	0.29	0.4529		

CETIS Analytical Report

Report Date: 14 Jan-13 14:33 (p 6 of 24)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 14-1567-2618 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-020	07-2784-0432	15 Nov-12 10:52	17 Nov-12 13:05	22d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-020	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21E; 22800-020						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	14.8%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-020	6.795	1.761	0.092	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.606	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.5067287		0.5067287		1	46.17	<0.0001	Significant Effect		
Error	0.1536649		0.01097606		14					
Total	0.6603936				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.146	8.885	0.8622	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8982	0.8408	0.0752	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-020	8	0.2687	0.1842	0.3533	0.2179	0.19	0.4312	0.03576	37.64%	56.98%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-020	0.4312	0.422	0.19	0.276	0.2257	0.21	0.2	0.195		

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID:	01-1246-3534	Endpoint: Mean Dry Weight-mg			CETIS Version:	CETISv1.8.6				
Analyzed:	14 Jan-13 14:20	Analysis: Parametric-Two Sample			Official Results:	Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-019	07-8610-6905	15 Nov-12 10:08	17 Nov-12 13:05	22d 2h						
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000							
22800-019	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21D; 22800-019							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	15.6%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value			
22800-000		22800-019	6.333	1.761	0.097	14	<0.0001			
					CDF	Significant Effect				
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.141	2.586	0.3349	No Outliers Detected				
ANOVA Table										
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)				
Between	0.4892783	0.4892783	1	40.11	<0.0001	Significant Effect				
Error	0.1707958	0.0121997	14							
Total	0.6600741		15							
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.082	8.885	0.9202	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9181	0.8408	0.1571	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-019	8	0.2749	0.1808	0.3691	0.2363	0.1457	0.5033	0.03981	40.96%	55.99%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-019	0.3711	0.5033	0.234	0.2167	0.28	0.2386	0.21	0.1457		

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 04-4381-3494 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-018	09-1843-1107	15 Nov-12 09:17	17 Nov-12 13:05	22d 3h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-018	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21C; 22800-018						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	11.8%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-018	6.461	1.761	0.074	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)				
Extreme Value	Grubbs Extreme Value		1.784	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	0.2941458		0.2941458		1	41.74	<0.0001	Significant Effect		
Error	0.09864949		0.007046392		14					
Total	0.3927953				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		4.942	8.885	0.0514	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9242	0.8408	0.1973	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-018	8	0.3535	0.3128	0.3942	0.3496	0.2925	0.4171	0.01722	13.78%	43.41%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-018	0.3022	0.4171	0.3843	0.4087	0.2925	0.3243	0.375	0.3237		

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 17-4412-7389 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-017	03-2230-4522	15 Nov-12 08:19	17 Nov-12 13:05	22d 4h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-017	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21B; 22800-017						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	17.0%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-017	7.059	1.771	0.106	13	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)				
Extreme Value	Grubbs Extreme Value		1.988	2.548	0.5056	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	0.6687528		0.6687528		1	49.83	<0.0001	Significant Effect		
Error	0.1744849		0.01342191		13					
Total	0.8432377				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		1.314	9.155	0.7222	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9148	0.8328	0.1606	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-017	7	0.2014	0.08664	0.3162	0.17	0.09001	0.4233	0.04691	61.62%	67.75%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-017	0.11	0.3067	0.4233	0.09001	0.1	0.21	0.17			

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 01-2801-0858 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-016	12-7040-7515	14 Nov-12 13:52	17 Nov-12 13:05	22d 22h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-016	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21A; 22800-016						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	13.9%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-016	6.148	1.761	0.087	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)				
Extreme Value	Grubbs Extreme Value		2.154	2.586	0.3189	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	0.3684188		0.3684188		1	37.8	<0.0001	Significant Effect		
Error	0.1364547		0.009746767		14					
Total	0.5048735				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		1.508	8.885	0.6012	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9438	0.8408	0.3979	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-016	8	0.3212	0.2475	0.3949	0.2957	0.2486	0.5267	0.03117	27.45%	48.58%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-016	0.5267	0.3225	0.2678	0.2725	0.34	0.3	0.2486	0.2914		

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 04-5361-7631 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-015	07-6377-7783	14 Nov-12 12:52	17 Nov-12 13:05	22d 23h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-015	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20G; 22800-015						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	16.6%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-015	5.652	1.761	0.104	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)				
Extreme Value	Grubbs Extreme Value		2.017	2.586	0.5054	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	0.4440781		0.4440781		1	31.95	<0.0001	Significant Effect		
Error	0.1945872		0.01389909		14					
Total	0.6386654				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		1.372	8.885	0.6872	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9243	0.8408	0.1977	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-015	8	0.2915	0.1855	0.3975	0.2694	0.156	0.5212	0.04483	43.5%	53.34%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-015	0.5212	0.415	0.24	0.2987	0.328	0.1844	0.156	0.1883		

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 12-9089-2541 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-014	12-2328-2385	14 Nov-12 11:49	17 Nov-12 13:05	23d 0h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-014	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20F; 22800-014						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	34.8%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-014	4.83	1.895	0.218	7	0.0009	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.429	2.215	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.2734803		0.2734803		1	23.33	0.0019	Significant Effect		
Error	0.08204769		0.0117211		7					
Total	0.355528				8					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Levene Equality of Variance		8.155	12.25	0.0245	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8602	0.7007	0.0964	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-014	1	0.06999			0.06999	0.06999	0.06999	0	0.0%	88.8%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-014					0.06999					

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 09-5966-1830 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-013	13-4098-0624	14 Nov-12 11:12	17 Nov-12 13:05	23d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-013	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20E; 22800-013						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	15.7%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-013	5.19	1.761	0.098	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)				
Extreme Value	Grubbs Extreme Value		1.676	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	0.3321383		0.3321383		1	26.93	0.0001	Significant Effect		
Error	0.1726518		0.01233227		14					
Total	0.5047901				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		1.104	8.885	0.8992	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9373	0.8408	0.3178	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-013	8	0.3365	0.2414	0.4316	0.3194	0.1567	0.5017	0.04022	33.81%	46.13%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-013	0.405	0.5017	0.4587	0.33	0.25	0.3088	0.2813	0.1567		

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 07-0027-7991 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-012	08-8087-7260	14 Nov-12 09:14	17 Nov-12 13:05	23d 3h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-012	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20D; 22800-012						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	16.3%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-012	5.303	1.761	0.102	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.951	2.586	0.6220	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.3762486		0.3762486		1	28.12	0.0001	Significant Effect		
Error	0.1873014		0.01337867		14					
Total	0.56355				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.283	8.885	0.7508	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9581	0.8408	0.6283	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-012	8	0.318	0.2155	0.4205	0.3522	0.1	0.5071	0.04335	38.56%	49.1%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-012	0.372	0.3456	0.5071	0.3033	0.36	0.197	0.3587	0.1		

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 00-8239-4514 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-011	06-7617-7021	14 Nov-12 08:15	17 Nov-12 13:05	23d 4h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-011	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20C; 22800-011						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	16.3%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-011	3.998	1.771	0.102	13	0.0008	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.736	2.548	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.1978843		0.1978843		1	15.98	0.0015	Significant Effect		
Error	0.1609804		0.01238311		13					
Total	0.3588647				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.122	9.155	0.8714	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9097	0.8328	0.1338	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-011	7	0.3944	0.2884	0.5005	0.3575	0.2083	0.5513	0.04335	29.08%	36.86%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-011	0.48	0.5513	0.3575	0.34	0.473	0.351	0.2083			

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 02-5715-7867 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-010	00-6504-4240	13 Nov-12 14:41	17 Nov-12 13:05	23d 21h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-010	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20B; 22800-010						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	16.2%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-010	4.762	1.761	0.101	14	0.0002	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.153	2.586	0.3208	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.2999435		0.2999435		1	22.68	0.0003	Significant Effect		
Error	0.1851457		0.01322469		14					
Total	0.4850892				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.257	8.885	0.7709	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9348	0.8408	0.2896	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-010	8	0.3508	0.2494	0.4523	0.34	0.21	0.59	0.04291	34.59%	43.84%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-010	0.2514	0.41	0.3511	0.21	0.4086	0.2567	0.3289	0.59		

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 05-0976-6180 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-009	08-6088-6776	13 Nov-12 13:30	17 Nov-12 13:05	23d 22h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-009	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20A; 22800-009						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	13.7%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-009	7.714	1.771	0.086	13	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.608	2.548	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.5184895		0.5184895		1	59.5	<0.0001	Significant Effect		
Error	0.1132829		0.008714072		13					
Total	0.6317724				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.252	10.79	0.3421	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8849	0.8328	0.0563	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-009	7	0.252	0.1853	0.3187	0.2871	0.1133	0.3078	0.02727	28.63%	59.66%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-009	0.302	0.2871	0.1938	0.3078	0.27	0.29	0.1133			

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 20-9789-0731 Analyzed: 14 Jan-13 14:21			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-008	11-9606-6366	13 Nov-12 11:59	17 Nov-12 13:05	24d 0h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-008	Freshwater Sediment	Lower Passaic River Ecological R		UPRT19M; 22800-008						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	11.9%					
Unequal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-008	7.024	1.86	0.074	8	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.878	2.586	0.7704	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.3136387		0.3136387		1	49.34	<0.0001	Significant Effect		
Error	0.08900134		0.006357238		14					
Total	0.40264				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		11.8	8.885	0.0042	Unequal Variances				
Distribution	Shapiro-Wilk W Normality		0.9421	0.8408	0.3751	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-008	8	0.3447	0.3183	0.371	0.342	0.304	0.395	0.01114	9.15%	44.83%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-008	0.395	0.3425	0.36	0.3733	0.3367	0.3043	0.3414	0.304		

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 05-0699-1886 Analyzed: 14 Jan-13 14:21			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-007	04-8067-7422	13 Nov-12 10:55	17 Nov-12 13:05	24d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-007	Freshwater Sediment	Lower Passaic River Ecological R		UPRT19L; 22800-007						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	17.1%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-007	4.664	1.761	0.107	14	0.0002	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.92	2.586	0.6812	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.3216312		0.3216312		1	21.76	0.0004	Significant Effect		
Error	0.2069605		0.0147829		14					
Total	0.5285917				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.522	8.885	0.5929	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9703	0.8408	0.8440	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-007	8	0.3411	0.2294	0.4528	0.338	0.1167	0.5667	0.04723	39.16%	45.39%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-007	0.5667	0.33	0.3343	0.38	0.434	0.3417	0.1167	0.2256		

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 07-7241-4521 Analyzed: 14 Jan-13 14:21			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-006	15-2324-2159	13 Nov-12 09:46	17 Nov-12 13:05	24d 2h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-006	Freshwater Sediment	Lower Passaic River Ecological R		UPRT19K; 22800-006						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	12.4%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-006	5.433	1.761	0.078	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.7	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.2290909		0.2290909		1	29.52	<0.0001	Significant Effect		
Error	0.108649		0.007760643		14					
Total	0.3377399				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		3.084	8.885	0.1604	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9141	0.8408	0.1358	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-006	8	0.3854	0.3338	0.4369	0.3713	0.285	0.475	0.0218	16.0%	38.31%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-006	0.475	0.436	0.3825	0.3587	0.285	0.44	0.36	0.3456		

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 01-5138-3895 Analyzed: 14 Jan-13 14:21			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-004	08-4834-2931	12 Nov-12 14:37	17 Nov-12 13:05	24d 21h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-004	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18K; 22800-004						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	13.8%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-004	5.092	1.761	0.086	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.532	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.2475629		0.2475629		1	25.93	0.0002	Significant Effect		
Error	0.1336839		0.009548852		14					
Total	0.3812469				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.589	8.885	0.5561	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9174	0.8408	0.1533	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-004	8	0.3759	0.3041	0.4477	0.3664	0.2663	0.5171	0.03037	22.85%	39.83%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-004	0.2663	0.385	0.3689	0.364	0.3175	0.4817	0.5171	0.3067		

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 07-1141-0727 Analyzed: 14 Jan-13 14:21			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-003	11-7795-6459	12 Nov-12 13:21	17 Nov-12 13:05	24d 23h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-003	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18J; 22800-003						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	12.5%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-003	6.578	1.761	0.078	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.695	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.3378549		0.3378549		1	43.27	<0.0001	Significant Effect		
Error	0.1093219		0.007808707		14					
Total	0.4471768				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		3.008	8.885	0.1695	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9253	0.8408	0.2055	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-003	8	0.334	0.2819	0.3862	0.3222	0.2556	0.4478	0.02207	18.69%	46.52%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-003	0.29	0.369	0.3811	0.4478	0.2844	0.3278	0.2556	0.3167		

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Report Date: 14 Jan-13 14:34 (p 23 of 24)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 06-3082-6225 Analyzed: 14 Jan-13 14:21			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-002	12-7608-5227	12 Nov-12 12:17	17 Nov-12 13:05	25d						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-002	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18H; 22800-002						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	13.0%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-002	6.798	1.761	0.081	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.622	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.3938103		0.3938103		1	46.21	<0.0001	Significant Effect		
Error	0.1193009		0.008521491		14					
Total	0.5131112				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.202	8.885	0.3193	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9028	0.8408	0.0892	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-002	8	0.3109	0.2499	0.3719	0.3191	0.2075	0.4188	0.02579	23.46%	50.23%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-002	0.4188	0.37	0.326	0.362	0.2075	0.3122	0.2444	0.2463		

CETIS Analytical Report

Report Date: 14 Jan-13 14:34 (p 24 of 24)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 07-3564-3604 Analyzed: 14 Jan-13 14:21			Endpoint: Mean Dry Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-001	16-4551-8127	12 Nov-12 10:13	17 Nov-12 13:05	25d 2h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-001	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18I; 22800-001						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	12.6%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-001	8.325	1.761	0.079	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.679	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.5514915		0.5514915		1	69.31	<0.0001	Significant Effect		
Error	0.1114004		0.007957174		14					
Total	0.6628919				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.795	8.885	0.1984	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8851	0.8408	0.0466	Normal Distribution				
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.6247	0.5342	0.7152	0.6405	0.48	0.7275	0.03828	17.33%	0.0%
22800-001	8	0.2534	0.1992	0.3075	0.2178	0.185	0.36	0.02289	25.56%	59.44%
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.7256	0.7067	0.726	0.5743	0.494	0.48	0.7275	0.5633		
22800-001	0.292	0.33	0.2129	0.2156	0.2114	0.22	0.185	0.36		

**CETIS Analytical Reports
Dry Biomass Comparisons**

**in support of the Ecological Risk Assessment for
Lower Passaic River Remedial Investigation
Purchase Order Number 2012-0042**

CETIS Analytical Report

Report Date: 14 Jan-13 14:32 (p 1 of 22)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 09-4328-4528 Analyzed: 14 Jan-13 14:19			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-024	09-8169-6091	16 Nov-12 09:09	17 Nov-12 13:05	21d 3h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-024	Freshwater Sediment	Lower Passaic River Ecological R		UPRT22B; 22800-024						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	16.4%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-024	5.651	1.761	0.092	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.753	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.348396		0.348396		1	31.93	<0.0001	Significant Effect		
Error	0.1527645		0.01091175		14					
Total	0.5011605				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.128	8.885	0.8774	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9646	0.8408	0.7456	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-024	8	0.2649	0.1802	0.3495	0.292	0.088	0.388	0.0358	38.23%	52.7%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-024	0.351	0.293	0.388	0.327	0.218	0.291	0.163	0.088		

CETIS Analytical Report

Report Date: 14 Jan-13 14:32 (p 2 of 22)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 13-6265-4425 Analyzed: 14 Jan-13 14:19			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-023	04-1666-1117	16 Nov-12 08:06	17 Nov-12 13:05	21d 4h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-023	Freshwater Sediment	Lower Passaic River Ecological R		UPRT22A; 22800-023						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	16.3%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-023	5.214	1.761	0.091	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.85	2.586	0.8350	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.2921401		0.2921401		1	27.19	0.0001	Significant Effect		
Error	0.1504427		0.01074591		14					
Total	0.4425828				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.166	8.885	0.8444	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9522	0.8408	0.5249	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-023	8	0.2898	0.2065	0.373	0.2685	0.168	0.475	0.03522	34.38%	48.26%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-023	0.391	0.168	0.475	0.25	0.229	0.297	0.287	0.221		

CETIS Analytical Report

Report Date: 14 Jan-13 14:32 (p 3 of 22)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 18-2820-2441 Analyzed: 14 Jan-13 14:19			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-022	08-0539-1503	15 Nov-12 12:25	17 Nov-12 13:05	22d						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-022	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21G; 22800-022						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	16.1%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-022	6.006	1.761	0.090	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.679	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.3779189		0.3779189		1	36.07	<0.0001	Significant Effect		
Error	0.1466935		0.01047811		14					
Total	0.5246123				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.233	8.885	0.7895	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9535	0.8408	0.5466	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-022	8	0.2526	0.1716	0.3336	0.28	0.1	0.386	0.03425	38.35%	54.89%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-022	0.308	0.386	0.1	0.329	0.27	0.165	0.173	0.29		

CETIS Analytical Report

Report Date: 14 Jan-13 14:32 (p 4 of 22)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 15-3431-9405 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-021	09-5811-7655	15 Nov-12 11:29	17 Nov-12 13:05	22d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-021	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21F; 22800-021						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	15.7%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-021	6.155	1.761	0.088	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)				
Extreme Value	Grubbs Extreme Value		1.725	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	0.3757691		0.3757691		1	37.88	<0.0001	Significant Effect		
Error	0.1388697		0.009919264		14					
Total	0.5146388				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		1.399	8.885	0.6686	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.968	0.8408	0.8055	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-021	8	0.2535	0.1775	0.3295	0.2735	0.128	0.389	0.03215	35.87%	54.73%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-021	0.303	0.389	0.244	0.303	0.199	0.128	0.145	0.317		

CETIS Analytical Report

Report Date: 14 Jan-13 14:32 (p 5 of 22)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 20-0421-2291 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-020	07-2784-0432	15 Nov-12 10:52	17 Nov-12 13:05	22d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-020	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21E; 22800-020						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	15.8%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-020	7.995	1.761	0.088	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.917	2.586	0.6873	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.6420035		0.6420035		1	63.92	<0.0001	Significant Effect		
Error	0.1406038		0.01004312		14					
Total	0.7826073				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.359	8.885	0.6961	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9666	0.8408	0.7813	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-020	8	0.1594	0.08223	0.2365	0.1435	0.019	0.345	0.03263	57.9%	71.54%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-020	0.345	0.211	0.019	0.138	0.158	0.147	0.14	0.117		

CETIS Analytical Report

Report Date: 14 Jan-13 14:32 (p 6 of 22)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 17-8729-1703 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-019	07-8610-6905	15 Nov-12 10:08	17 Nov-12 13:05	22d 2h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-019	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21D; 22800-019						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	16.6%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-019	7.296	1.761	0.093	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.631	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.5905919		0.5905919		1	53.23	<0.0001	Significant Effect		
Error	0.1553208		0.01109434		14					
Total	0.7459127				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.09	8.885	0.9127	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.95	0.8408	0.4896	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-019	8	0.1758	0.0896	0.2619	0.1675	0.021	0.334	0.03643	58.63%	68.62%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-019	0.334	0.302	0.117	0.195	0.168	0.167	0.021	0.102		

CETIS Analytical Report

Report Date: 14 Jan-13 16:36 (p 1 of 1)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 12-0167-8349 Analyzed: 14 Jan-13 16:35			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-018	09-1843-1107	15 Nov-12 09:17	17 Nov-12 13:05	22d 3h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-018	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21C; 22800-018						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	13.2%					
Unequal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-018	7.218	1.86	0.074	8	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.157	2.586	0.3161	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.3306259		0.3306259		1	52.1	<0.0001	Significant Effect		
Error	0.08884741		0.006346243		14					
Total	0.4194733				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		10.31	8.885	0.0064	Unequal Variances				
Distribution	Shapiro-Wilk W Normality		0.9864	0.8408	0.9947	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-018	8	0.2725	0.2445	0.3005	0.2705	0.227	0.327	0.01184	12.29%	51.34%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-018	0.272	0.292	0.269	0.327	0.234	0.227	0.3	0.259		

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Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 10-7576-1777 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-015	07-6377-7783	14 Nov-12 12:52	17 Nov-12 13:05	22d 23h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-015	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20G; 22800-015						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	16.7%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-015	6.793	1.761	0.094	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.122	2.586	0.3570	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.5205634		0.5205634		1	46.15	<0.0001	Significant Effect		
Error	0.1579293		0.01128066		14					
Total	0.6784926				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.053	8.885	0.9477	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9605	0.8408	0.6704	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-015	8	0.1992	0.1116	0.2869	0.167	0.078	0.417	0.03707	52.62%	64.42%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-015	0.417	0.249	0.168	0.239	0.164	0.166	0.078	0.113		

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 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 17-8022-5778 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-017	03-2230-4522	15 Nov-12 08:19	17 Nov-12 13:05	22d 4h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-017	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21B; 22800-017						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	15.1%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-017	10.56	1.771	0.085	13	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.867	2.548	0.7300	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.9494031		0.9494031		1	111.5	<0.0001	Significant Effect		
Error	0.1106446		0.008511124		13					
Total	1.060048				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.341	10.79	0.3197	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9358	0.8328	0.3321	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-017	7	0.05571	-0.009301	0.1207	0.021	0.009001	0.184	0.02657	126.2%	90.05%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-017	0.022	0.184	0.127	0.009001	0.01	0.021	0.017			

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Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 12-8693-9255 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-016	12-7040-7515	14 Nov-12 13:52	17 Nov-12 13:05	22d 22h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-016	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21A; 22800-016						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	14.0%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-016	7.662	1.761	0.079	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)				
Extreme Value	Grubbs Extreme Value		1.923	2.586	0.6753	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	0.4685409		0.4685409		1	58.7	<0.0001	Significant Effect		
Error	0.1117469		0.007981918		14					
Total	0.5802878				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		2.634	8.885	0.2247	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9853	0.8408	0.9920	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-016	8	0.2177	0.1623	0.2732	0.2225	0.109	0.316	0.02343	30.44%	61.12%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-016	0.316	0.258	0.241	0.109	0.17	0.27	0.174	0.204		

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Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 05-6254-7052 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-014	12-2328-2385	14 Nov-12 11:49	17 Nov-12 13:05	23d 0h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-014	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20F; 22800-014						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	38.6%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-014	4.847	1.895	0.216	7	0.0009	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.65	2.215	0.6813	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.2718312		0.2718312		1	23.49	0.0019	Significant Effect		
Error	0.08099354		0.01157051		7					
Total	0.3528248				8					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Levene Equality of Variance		2.87	12.25	0.1341	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9826	0.7007	0.9761	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-014	1	0.006999			0.006999	0.006999	0.006999	0	0.0%	98.75%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-014		0.006999								

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Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 03-9486-0772 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-013	13-4098-0624	14 Nov-12 11:12	17 Nov-12 13:05	23d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-013	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20E; 22800-013						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	15.8%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-013	6.667	1.761	0.088	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.715	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.4462241		0.4462241		1	44.45	<0.0001	Significant Effect		
Error	0.1405554		0.01003967		14					
Total	0.5867795				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.36	8.885	0.6953	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9665	0.8408	0.7795	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-013	8	0.226	0.1489	0.3031	0.237	0.094	0.367	0.03261	40.82%	59.64%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-013	0.243	0.301	0.367	0.231	0.1	0.247	0.225	0.094		

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Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.					
Analysis ID:		11-2980-5010	Endpoint:		Mean Dry Biomass-mg		CETIS Version:	CETISv1.8.6				
Analyzed:		14 Jan-13 14:20	Analysis:		Parametric-Two Sample		Official Results:		Yes			
Sample Code	Sample ID	Sample Date		Receive Date	Sample Age	Client Name	Project					
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h		Windward Environmental	Ecological Risk Asse					
22800-012	08-8087-7260	14 Nov-12 09:14	17 Nov-12 13:05	23d 3h								
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude					
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000									
22800-012	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20D; 22800-012									
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result						
Untransformed	NA	C > T	NA	NA	18.0%							
Equal Variance t Two-Sample Test												
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)			
22800-000		22800-012	5.564	1.761	0.101	14	<0.0001	CDF	Significant Effect			
Auxiliary Tests												
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)						
Extreme Value	Grubbs Extreme Value		1.914	2.586	0.6935	No Outliers Detected						
ANOVA Table												
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)				
Between	0.4054521		0.4054521		1	30.96	<0.0001	Significant Effect				
Error	0.1833325		0.01309518		14							
Total	0.5887846				15							
Distributional Tests												
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)						
Variances	Variance Ratio F		1.264	8.885	0.7655	Equal Variances						
Distribution	Shapiro-Wilk W Normality		0.9622	0.8408	0.7011	Normal Distribution						
Mean Dry Biomass-mg Summary												
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect		
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%		
22800-012	8	0.2416	0.1405	0.3427	0.28	0.03	0.372	0.04275	50.04%	56.85%		
Mean Dry Biomass-mg Detail												
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8				
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507				
22800-012	0.372	0.311	0.355	0.273	0.108	0.197	0.287	0.03				

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Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 10-4976-2615 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-011	06-7617-7021	14 Nov-12 08:15	17 Nov-12 13:05	23d 4h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-011	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20C; 22800-011						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	19.8%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-011	4.056	1.771	0.111	13	0.0007	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.55	2.548	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.2411311		0.2411311		1	16.45	0.0014	Significant Effect		
Error	0.1905187		0.01465528		13					
Total	0.4316497				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.578	9.155	0.5625	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9445	0.8328	0.4419	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-011	7	0.3059	0.1809	0.4308	0.336	0.125	0.473	0.05107	44.17%	45.38%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-011	0.336	0.441	0.143	0.272	0.473	0.351	0.125			

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Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 14-4030-4910 Analyzed: 14 Jan-13 14:20			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-010	00-6504-4240	13 Nov-12 14:41	17 Nov-12 13:05	23d 21h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-010	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20B; 22800-010						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	17.0%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-010	5.881	1.761	0.095	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)				
Extreme Value	Grubbs Extreme Value		1.763	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	0.4025919		0.4025919		1	34.58	<0.0001	Significant Effect		
Error	0.162983		0.01164164		14					
Total	0.5655749				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		1.012	8.885	0.9876	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9602	0.8408	0.6654	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-010	8	0.2427	0.1523	0.3332	0.2585	0.059	0.41	0.03826	44.58%	56.65%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-010	0.176	0.41	0.316	0.168	0.286	0.231	0.296	0.059		

CETIS Analytical Report

Report Date: 14 Jan-13 14:32 (p 15 of 22)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 00-8993-4522 Analyzed: 14 Jan-13 14:21			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-009	08-6088-6776	13 Nov-12 13:30	17 Nov-12 13:05	23d 22h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-009	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20A; 22800-009						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	14.5%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-009	8.559	1.771	0.081	13	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.941	2.548	0.5854	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.5770299		0.5770299		1	73.25	<0.0001	Significant Effect		
Error	0.1024041		0.007877242		13					
Total	0.6794341				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		3.242	10.79	0.1730	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9753	0.8328	0.9275	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-009	7	0.1669	0.1116	0.2221	0.155	0.102	0.277	0.02258	35.8%	70.2%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-009	0.151	0.201	0.155	0.277	0.108	0.174	0.102			

CETIS Analytical Report

Report Date: 14 Jan-13 14:32 (p 16 of 22)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 04-2275-5558 Analyzed: 14 Jan-13 14:21			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-008	11-9606-6366	13 Nov-12 11:59	17 Nov-12 13:05	24d 0h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-008	Freshwater Sediment	Lower Passaic River Ecological R		UPRT19M; 22800-008						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	14.5%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-008	8.948	1.761	0.081	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.864	2.586	0.8014	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.6802147		0.6802147		1	80.08	<0.0001	Significant Effect		
Error	0.1189255		0.008494675		14					
Total	0.7991402				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.135	8.885	0.3383	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.968	0.8408	0.8044	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-008	8	0.1476	0.08608	0.2092	0.1445	0.036	0.239	0.02603	49.86%	73.64%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-008	0.079	0.137	0.036	0.224	0.101	0.213	0.239	0.152		

CETIS Analytical Report

Report Date: 14 Jan-13 14:32 (p 17 of 22)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 20-7771-9856 Analyzed: 14 Jan-13 14:21			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-007	04-8067-7422	13 Nov-12 10:55	17 Nov-12 13:05	24d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-007	Freshwater Sediment	Lower Passaic River Ecological R		UPRT19L; 22800-007						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	18.9%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-007	5.462	1.761	0.106	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.395	2.586	0.1237	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.4296808		0.4296808		1	29.83	<0.0001	Significant Effect		
Error	0.2016723		0.01440516		14					
Total	0.631353				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.49	8.885	0.6118	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9545	0.8408	0.5644	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-007	8	0.2323	0.1225	0.342	0.211	0.035	0.51	0.04642	56.53%	58.53%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-007	0.51	0.264	0.234	0.19	0.217	0.205	0.035	0.203		

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Report Date: 14 Jan-13 14:32 (p 18 of 22)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 11-1743-6307 Analyzed: 14 Jan-13 14:21			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-006	15-2324-2159	13 Nov-12 09:46	17 Nov-12 13:05	24d 2h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-006	Freshwater Sediment	Lower Passaic River Ecological R		UPRT19K; 22800-006						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	15.6%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-006	4.301	1.761	0.087	14	0.0004	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)				
Extreme Value	Grubbs Extreme Value		1.73	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	0.1825428		0.1825428		1	18.5	0.0007	Significant Effect		
Error	0.1381636		0.009868831		14					
Total	0.3207065				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		1.417	8.885	0.6573	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9345	0.8408	0.2875	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-006	8	0.3464	0.2708	0.4219	0.3085	0.228	0.475	0.03195	26.09%	38.15%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-006	0.475	0.436	0.306	0.287	0.228	0.44	0.288	0.311		

CETIS Analytical Report

Report Date: 14 Jan-13 14:32 (p 19 of 22)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 19-3781-9679 Analyzed: 14 Jan-13 14:21			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-004	08-4834-2931	12 Nov-12 14:37	17 Nov-12 13:05	24d 21h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-004	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18K; 22800-004						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	14.2%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-004	6.227	1.761	0.08	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)				
Extreme Value	Grubbs Extreme Value		1.901	2.586	0.7201	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	0.3166879		0.3166879		1	38.78	<0.0001	Significant Effect		
Error	0.1143254		0.008166099		14					
Total	0.4310132				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		2.43	8.885	0.2643	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9654	0.8408	0.7590	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-004	8	0.2786	0.2209	0.3363	0.2715	0.184	0.364	0.0244	24.77%	50.25%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-004	0.213	0.231	0.332	0.364	0.254	0.289	0.362	0.184		

CETIS Analytical Report

Report Date: 14 Jan-13 14:32 (p 20 of 22)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 13-5151-6375 Analyzed: 14 Jan-13 14:21			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-003	11-7795-6459	12 Nov-12 13:21	17 Nov-12 13:05	24d 23h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-003	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18J; 22800-003						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	13.9%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-003	5.832	1.761	0.078	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.939	2.586	0.6436	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.2670313		0.2670313		1	34.02	<0.0001	Significant Effect		
Error	0.1099014		0.007850103		14					
Total	0.3769327				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.802	8.885	0.1975	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9683	0.8408	0.8112	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-003	8	0.3016	0.2479	0.3553	0.29	0.23	0.403	0.02272	21.31%	46.14%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-003	0.232	0.369	0.343	0.403	0.256	0.295	0.23	0.285		

CETIS Analytical Report

Report Date: 14 Jan-13 14:32 (p 21 of 22)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 01-5585-0420 Analyzed: 14 Jan-13 14:21			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-002	12-7608-5227	12 Nov-12 12:17	17 Nov-12 13:05	25d						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-002	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18H; 22800-002						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	14.4%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-002	6.468	1.761	0.081	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.875	2.586	0.7772	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.3513519		0.3513519		1	41.84	<0.0001	Significant Effect		
Error	0.1175638		0.008397414		14					
Total	0.4689157				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.215	8.885	0.3160	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9609	0.8408	0.6782	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-002	8	0.2636	0.2032	0.3241	0.2515	0.166	0.362	0.02555	27.42%	52.92%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-002	0.335	0.222	0.326	0.362	0.166	0.281	0.22	0.197		

CETIS Analytical Report

Report Date: 14 Jan-13 14:32 (p 22 of 22)
 Test Code: 22800Ha | 16-1206-9310

Hyalella 28-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 12-2857-9455 Analyzed: 14 Jan-13 14:21			Endpoint: Mean Dry Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-001	16-4551-8127	12 Nov-12 10:13	17 Nov-12 13:05	25d 2h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-001	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18I; 22800-001						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	14.3%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-001	8.402	1.761	0.080	14	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.885	2.586	0.7544	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.5863727		0.5863727		1	70.6	<0.0001	Significant Effect		
Error	0.1162788		0.008305627		14					
Total	0.7026514				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.295	8.885	0.2953	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9841	0.8408	0.9879	Normal Distribution				
Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.56	0.4701	0.6499	0.5445	0.402	0.726	0.03803	19.21%	0.0%
22800-001	8	0.1771	0.1178	0.2365	0.1715	0.072	0.292	0.0251	40.08%	68.37%
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.653	0.636	0.726	0.402	0.494	0.48	0.582	0.507		
22800-001	0.292	0.231	0.149	0.194	0.148	0.22	0.111	0.072		

STUDY: 22801
CLIENT: Windward Environmental, LLC.
PROJECT: Lower Passaic River Remedial Investigation
ASSAY: Hyalella azteca 28 Day Sediment Assay
TASK: Overlying Water Alkalinity Summary
METHOD: EPA 310.2

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-000	Lab Control	000	0	22801-100	Water	64	2	mg/L	12/07/12 0830	12/20/12 1427
22800-001	UPRT18I	001	0	22801-101	Water	45	2	mg/L	12/07/12 0830	12/20/12 1428
22800-002	UPRT18H	002	0	22801-102	Water	50	2	mg/L	12/07/12 0830	12/20/12 1430
22800-003	UPRT18J	003	0	22801-103	Water	47	2	mg/L	12/07/12 0830	12/20/12 1438
22800-004	UPRT18K	004	0	22801-104	Water	50	2	mg/L	12/07/12 0830	12/20/12 1442
22800-005	UPRT19J	005	0	22801-105	Water	43	2	mg/L	12/07/12 0830	12/20/12 1444
22800-006	UPRT19K	006	0	22801-106	Water	54	2	mg/L	12/07/12 0830	12/20/12 1445
22800-007	UPRT19L	007	0	22801-107	Water	52	2	mg/L	12/07/12 0830	12/20/12 1446
22800-008	UPRT19M	008	0	22801-108	Water	48	2	mg/L	12/07/12 0830	12/20/12 1448
22800-009	UPRT20A	009	0	22801-109	Water	61	2	mg/L	12/07/12 0830	12/20/12 1449
22800-010	UPRT20B	010	0	22801-110	Water	71	2	mg/L	12/07/12 0830	12/20/12 1450
22800-011	UPRT20C	011	0	22801-111	Water	64	2	mg/L	12/07/12 0830	12/20/12 1455
22800-012	UPRT20D	012	0	22801-112	Water	53	2	mg/L	12/07/12 0830	12/20/12 1456
22800-013	UPRT20E	013	0	22801-113	Water	51	2	mg/L	12/07/12 0830	12/20/12 1457
22800-014	UPRT20F	014	0	22801-114	Water	43	2	mg/L	12/07/12 0830	12/20/12 1459
22800-015	UPRT20G	015	0	22801-115	Water	60	2	mg/L	12/07/12 0830	12/20/12 1500
22800-016	UPRT21A	016	0	22801-116	Water	59	2	mg/L	12/07/12 0830	12/20/12 1501
22800-017	UPRT21B	017	0	22801-117	Water	100	4	mg/L	12/07/12 0830	12/20/12 1538
22800-018	UPRT21C	018	0	22801-118	Water	70	2	mg/L	12/07/12 0830	12/20/12 1504
22800-019	UPRT21D	019	0	22801-119	Water	75	2	mg/L	12/07/12 0830	12/20/12 1505
22800-020	UPRT21E	020	0	22801-120	Water	60	2	mg/L	12/07/12 0830	12/20/12 1507
22800-021	UPRT21F	021	0	22801-121	Water	73	2	mg/L	12/07/12 0830	12/20/12 1511
22800-022	UPRT21G	022	0	22801-122	Water	52	2	mg/L	12/07/12 0830	12/20/12 1512
22800-023	UPRT22A	023	0	22801-123	Water	56	2	mg/L	12/07/12 0830	12/21/12 1204
22800-024	UPRT22B	024	0	22801-124	Water	77	2	mg/L	12/07/12 0830	12/21/12 1208
22800-000	Lab Control	000	7	22801-200	Water	62	2	mg/L	12/14/12 0930	12/21/12 1430
22800-001	UPRT18I	001	7	22801-201	Water	54	2	mg/L	12/14/12 0930	12/21/12 1432
22800-002	UPRT18H	002	7	22801-202	Water	57	2	mg/L	12/14/12 0930	12/21/12 1433
22800-003	UPRT18J	003	7	22801-203	Water	52	2	mg/L	12/14/12 0930	12/21/12 1434
22800-004	UPRT18K	004	7	22801-204	Water	56	2	mg/L	12/14/12 0930	12/21/12 1436

TASK: Overlying Water Alkalinity Summary
METHOD: EPA 310.2

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-005	UPRT19J	005	7	22801-205	Water	53	2	mg/L	12/14/12 0930	12/21/12 1437
22800-006	UPRT19K	006	7	22801-206	Water	54	2	mg/L	12/14/12 0930	12/21/12 1441
22800-007	UPRT19L	007	7	22801-207	Water	54	2	mg/L	12/14/12 0930	12/21/12 1443
22800-008	UPRT19M	008	7	22801-208	Water	49	2	mg/L	12/14/12 0930	12/21/12 1506
22800-009	UPRT20A	009	7	22801-209	Water	58	2	mg/L	12/14/12 0930	12/21/12 1507
22800-010	UPRT20B	010	7	22801-210	Water	59	2	mg/L	12/14/12 0930	12/21/12 1508
22800-011	UPRT20C	011	7	22801-211	Water	61	2	mg/L	12/14/12 0930	12/21/12 1510
22800-012	UPRT20D	012	7	22801-212	Water	44	2	mg/L	12/14/12 0930	12/26/12 1046
22800-013	UPRT20E	013	7	22801-213	Water	53	2	mg/L	12/14/12 0930	12/26/12 1048
22800-014	UPRT20F	014	7	22801-214	Water	51	2	mg/L	12/14/12 0930	12/26/12 1049
22800-015	UPRT20G	015	7	22801-215	Water	56	2	mg/L	12/14/12 0930	12/26/12 1050
22800-016	UPRT21A	016	7	22801-216	Water	55	2	mg/L	12/14/12 0930	12/26/12 1052
22800-017	UPRT21B	017	7	22801-217	Water	74	2	mg/L	12/14/12 0930	12/26/12 1053
22800-018	UPRT21C	018	7	22801-218	Water	65	2	mg/L	12/14/12 0930	12/26/12 1054
22800-019	UPRT21D	019	7	22801-219	Water	58	2	mg/L	12/14/12 0930	12/26/12 1103
22800-020	UPRT21E	020	7	22801-220	Water	58	2	mg/L	12/14/12 0930	12/26/12 1107
22800-021	UPRT21F	021	7	22801-221	Water	62	2	mg/L	12/14/12 0930	12/26/12 1108
22800-022	UPRT21G	022	7	22801-222	Water	54	2	mg/L	12/14/12 0930	12/26/12 1109
22800-023	UPRT22A	023	7	22801-223	Water	55	2	mg/L	12/14/12 0930	12/26/12 1111
22800-024	UPRT22B	024	7	22801-224	Water	59	2	mg/L	12/14/12 0930	12/26/12 1112
22800-000	Lab Control	000	14	22801-300	Water	66	2	mg/L	12/21/12 1100	12/26/12 1311
22800-001	UPRT18I	001	14	22801-301	Water	56	2	mg/L	12/21/12 1100	12/26/12 1313
22800-002	UPRT18H	002	14	22801-302	Water	64	2	mg/L	12/21/12 1100	12/26/12 1314
22800-003	UPRT18J	003	14	22801-303	Water	59	2	mg/L	12/21/12 1100	12/26/12 1315
22800-004	UPRT18K	004	14	22801-304	Water	55	2	mg/L	12/21/12 1100	12/26/12 1317
22800-005	UPRT19J	005	14	22801-305	Water	52	2	mg/L	12/21/12 1100	12/26/12 1318
22800-006	UPRT19K	006	14	22801-306	Water	57	2	mg/L	12/21/12 1100	12/26/12 1319
22800-007	UPRT19L	007	14	22801-307	Water	56	2	mg/L	12/21/12 1100	12/26/12 1321
22800-008	UPRT19M	008	14	22801-308	Water	52	2	mg/L	12/21/12 1100	12/26/12 1322
22800-009	UPRT20A	009	14	22801-309	Water	67	2	mg/L	12/21/12 1100	12/26/12 1323
22800-010	UPRT20B	010	14	22801-310	Water	76	2	mg/L	12/21/12 1100	12/26/12 1328
22800-011	UPRT20C	011	14	22801-311	Water	85	2	mg/L	12/21/12 1100	12/26/12 1329
22800-012	UPRT20D	012	14	22801-312	Water	56	2	mg/L	12/21/12 1100	12/26/12 1330
22800-013	UPRT20E	013	14	22801-313	Water	54	2	mg/L	12/21/12 1100	12/26/12 1332
22800-014	UPRT20F	014	14	22801-314	Water	66	2	mg/L	12/21/12 1100	12/26/12 1333

TASK: Overlying Water Alkalinity Summary
METHOD: EPA 310.2

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-015	UPRT20G	015	14	22801-315	Water	64	2	mg/L	12/21/12 1100	12/26/12 1334
22800-016	UPRT21A	016	14	22801-316	Water	58	2	mg/L	12/21/12 1100	12/26/12 1336
22800-017	UPRT21B	017	14	22801-317	Water	62	2	mg/L	12/21/12 1100	12/26/12 1337
22800-018	UPRT21C	018	14	22801-318	Water	74	2	mg/L	12/21/12 1100	12/26/12 1338
22800-019	UPRT21D	019	14	22801-319	Water	57	2	mg/L	12/21/12 1100	12/26/12 1347
22800-020	UPRT21E	020	14	22801-320	Water	59	2	mg/L	12/21/12 1100	12/26/12 1351
22800-021	UPRT21F	021	14	22801-321	Water	71	2	mg/L	12/21/12 1100	12/26/12 1352
22800-022	UPRT21G	022	14	22801-322	Water	55	2	mg/L	12/21/12 1100	12/26/12 1353
22800-023	UPRT22A	023	14	22801-323	Water	56	2	mg/L	12/21/12 1100	12/26/12 1355
22800-024	UPRT22B	024	14	22801-324	Water	57	2	mg/L	12/21/12 1100	12/26/12 1356
22800-000	Lab Control	000	21	22801-400	Water	58	2	mg/L	12/28/12 0915	01/08/13 1053
22800-001	UPRT18I	001	21	22801-401	Water	54	2	mg/L	12/28/12 0915	01/08/13 1057
22800-002	UPRT18H	002	21	22801-402	Water	54	2	mg/L	12/28/12 0915	01/08/13 1058
22800-003	UPRT18J	003	21	22801-403	Water	53	2	mg/L	12/28/12 0915	01/08/13 1103
22800-004	UPRT18K	004	21	22801-404	Water	42	2	mg/L	12/28/12 0915	01/08/13 1104
22800-005	UPRT19J	005	21	22801-405	Water	59	2	mg/L	12/28/12 0915	01/08/13 1106
22800-006	UPRT19K	006	21	22801-406	Water	55	2	mg/L	12/28/12 0915	01/08/13 1107
22800-007	UPRT19L	007	21	22801-407	Water	55	2	mg/L	12/28/12 0915	01/08/13 1108
22800-008	UPRT19M	008	21	22801-408	Water	55	2	mg/L	12/28/12 0915	01/08/13 1110
22800-009	UPRT20A	009	21	22801-409	Water	57	2	mg/L	12/28/12 0915	01/08/13 1111
22800-010	UPRT20B	010	21	22801-410	Water	54	2	mg/L	12/28/12 0915	01/08/13 1112
22800-011	UPRT20C	011	21	22801-411	Water	65	2	mg/L	12/28/12 0915	01/08/13 1114
22800-012	UPRT20D	012	21	22801-412	Water	61	2	mg/L	12/28/12 0915	01/08/13 1115
22800-013	UPRT20E	013	21	22801-413	Water	56	2	mg/L	12/28/12 0915	01/08/13 1119
22800-014	UPRT20F	014	21	22801-414	Water	58	2	mg/L	12/28/12 0915	01/08/13 1121
22800-015	UPRT20G	015	21	22801-415	Water	53	2	mg/L	12/28/12 0915	01/08/13 1122
22800-016	UPRT21A	016	21	22801-416	Water	57	2	mg/L	12/28/12 0915	01/08/13 1123
22800-017	UPRT21B	017	21	22801-417	Water	53	2	mg/L	12/28/12 0915	01/08/13 1125
22800-018	UPRT21C	018	21	22801-418	Water	59	2	mg/L	12/28/12 0915	01/08/13 1126
22800-019	UPRT21D	019	21	22801-419	Water	55	2	mg/L	12/28/12 0915	01/08/13 1127
22800-020	UPRT21E	020	21	22801-420	Water	57	2	mg/L	12/28/12 0915	01/08/13 1136
22800-021	UPRT21F	021	21	22801-421	Water	50	2	mg/L	12/28/12 0915	01/08/13 1140
22800-022	UPRT21G	022	21	22801-422	Water	54	2	mg/L	12/28/12 0915	01/08/13 1141
22800-023	UPRT22A	023	21	22801-423	Water	55	2	mg/L	12/28/12 0915	01/08/13 1142
22800-024	UPRT22B	024	21	22801-424	Water	54	2	mg/L	12/28/12 0915	01/08/13 1144

TASK: Overlying Water Alkalinity Summary
METHOD: EPA 310.2

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-000	Lab Control	000	28	22801-500	Water	61	2	mg/L	01/04/12 0930	01/08/13 1228
22800-001	UPRT18I	001	28	22801-501	Water	53	2	mg/L	01/04/12 0930	01/08/13 1229
22800-002	UPRT18H	002	28	22801-502	Water	54	2	mg/L	01/04/12 0930	01/08/13 1231
22800-003	UPRT18J	003	28	22801-503	Water	55	2	mg/L	01/04/12 0930	01/08/13 1232
22800-004	UPRT18K	004	28	22801-504	Water	54	2	mg/L	01/04/12 0930	01/08/13 1233
22800-005	UPRT19J	005	28	22801-505	Water	69	2	mg/L	01/04/12 0930	01/08/13 1234
22800-006	UPRT19K	006	28	22801-506	Water	53	2	mg/L	01/04/12 0930	01/08/13 1236
22800-007	UPRT19L	007	28	22801-507	Water	56	2	mg/L	01/04/12 0930	01/08/13 1237
22800-008	UPRT19M	008	28	22801-508	Water	56	2	mg/L	01/04/12 0930	01/08/13 1242
22800-009	UPRT20A	009	28	22801-509	Water	58	2	mg/L	01/04/12 0930	01/08/13 1243
22800-010	UPRT20B	010	28	22801-510	Water	55	2	mg/L	01/04/12 0930	01/08/13 1244
22800-011	UPRT20C	011	28	22801-511	Water	59	2	mg/L	01/04/12 0930	01/08/13 1246
22800-012	UPRT20D	012	28	22801-512	Water	60	2	mg/L	01/04/12 0930	01/08/13 1247
22800-013	UPRT20E	013	28	22801-513	Water	57	2	mg/L	01/04/12 0930	01/08/13 1248
22800-014	UPRT20F	014	28	22801-514	Water	54	2	mg/L	01/04/12 0930	01/08/13 1250
22800-015	UPRT20G	015	28	22801-515	Water	52	2	mg/L	01/04/12 0930	01/08/13 1258
22800-016	UPRT21A	016	28	22801-516	Water	57	2	mg/L	01/04/12 0930	01/08/13 1302
22800-017	UPRT21B	017	28	22801-517	Water	44	2	mg/L	01/04/12 0930	01/08/13 1303
22800-018	UPRT21C	018	28	22801-518	Water	59	2	mg/L	01/04/12 0930	01/08/13 1305
22800-019	UPRT21D	019	28	22801-519	Water	55	2	mg/L	01/04/12 0930	01/08/13 1306
22800-020	UPRT21E	020	28	22801-520	Water	57	2	mg/L	01/04/12 0930	01/08/13 1307
22800-021	UPRT21F	021	28	22801-521	Water	52	2	mg/L	01/04/12 0930	01/08/13 1309
22800-022	UPRT21G	022	28	22801-522	Water	54	2	mg/L	01/04/12 0930	01/08/13 1310
22800-023	UPRT22A	023	28	22801-523	Water	56	2	mg/L	01/04/12 0930	01/08/13 1314
22800-024	UPRT22B	024	28	22801-524	Water	56	2	mg/L	01/04/12 0930	01/08/13 1315

STUDY: 22801
CLIENT: Windward Environmental, LLC.
PROJECT: Lower Passaic River Remedial Investigation
ASSAY: Hyalella azteca 28 Day Sediment Assay
TASK: Overlying Water Hardness Summary
METHOD: SW846 3rd Ed. 6020

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-000	Lab Control	000	0	22801-125	Water	95	0.4	mg/L	12/07/12 0830	12/19/12
22800-001	UPRT18I	001	0	22801-126	Water	94	0.4	mg/L	12/07/12 0830	12/19/12
22800-002	UPRT18H	002	0	22801-127	Water	89	0.4	mg/L	12/07/12 0830	12/19/12
22800-003	UPRT18J	003	0	22801-128	Water	90	0.4	mg/L	12/07/12 0830	12/19/12
22800-004	UPRT18K	004	0	22801-129	Water	88	0.4	mg/L	12/07/12 0830	12/19/12
22800-005	UPRT19J	005	0	22801-130	Water	88	0.4	mg/L	12/07/12 0830	12/19/12
22800-006	UPRT19K	006	0	22801-131	Water	90	0.4	mg/L	12/07/12 0830	12/19/12
22800-007	UPRT19L	007	0	22801-132	Water	93	0.4	mg/L	12/07/12 0830	12/19/12
22800-008	UPRT19M	008	0	22801-133	Water	92	0.4	mg/L	12/07/12 0830	12/19/12
22800-009	UPRT20A	009	0	22801-134	Water	96	0.4	mg/L	12/07/12 0830	12/19/12
22800-010	UPRT20B	010	0	22801-135	Water	99	0.4	mg/L	12/07/12 0830	12/19/12
22800-011	UPRT20C	011	0	22801-136	Water	92	0.4	mg/L	12/07/12 0830	12/19/12
22800-012	UPRT20D	012	0	22801-137	Water	83	0.4	mg/L	12/07/12 0830	12/19/12
22800-013	UPRT20E	013	0	22801-138	Water	120	0.4	mg/L	12/07/12 0830	12/19/12
22800-014	UPRT20F	014	0	22801-139	Water	91	0.4	mg/L	12/07/12 0830	12/19/12
22800-015	UPRT20G	015	0	22801-140	Water	88	0.4	mg/L	12/07/12 0830	12/19/12
22800-016	UPRT21A	016	0	22801-141	Water	98	0.4	mg/L	12/07/12 0830	12/19/12
22800-017	UPRT21B	017	0	22801-142	Water	100	0.4	mg/L	12/07/12 0830	12/19/12
22800-018	UPRT21C	018	0	22801-143	Water	97	0.4	mg/L	12/07/12 0830	12/19/12
22800-019	UPRT21D	019	0	22801-144	Water	110	0.4	mg/L	12/07/12 0830	12/19/12
22800-020	UPRT21E	020	0	22801-145	Water	110	0.4	mg/L	12/07/12 0830	12/19/12
22800-021	UPRT21F	021	0	22801-146	Water	96	0.4	mg/L	12/07/12 0830	12/19/12
22800-022	UPRT21G	022	0	22801-147	Water	100	0.4	mg/L	12/07/12 0830	12/19/12
22800-023	UPRT22A	023	0	22801-148	Water	89	0.4	mg/L	12/07/12 0830	12/19/12
22800-024	UPRT22B	024	0	22801-149	Water	110	0.4	mg/L	12/07/12 0830	12/19/12
22800-000	Lab Control	000	7	22801-225	Water	86	0.4	mg/L	12/14/12 0930	12/20/12
22800-001	UPRT18I	001	7	22801-226	Water	86	0.4	mg/L	12/14/12 0930	12/20/12
22800-002	UPRT18H	002	7	22801-227	Water	80	0.4	mg/L	12/14/12 0930	12/20/12
22800-003	UPRT18J	003	7	22801-228	Water	92	0.4	mg/L	12/14/12 0930	12/20/12
22800-004	UPRT18K	004	7	22801-229	Water	84	0.4	mg/L	12/14/12 0930	12/20/12

TASK: Overlying Water Hardness Summary
METHOD: SW846 3rd Ed. 6020

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-005	UPRT19J	005	7	22801-230	Water	76	0.4	mg/L	12/14/12 0930	12/20/12
22800-006	UPRT19K	006	7	22801-231	Water	77	0.4	mg/L	12/14/12 0930	12/20/12
22800-007	UPRT19L	007	7	22801-232	Water	81	0.4	mg/L	12/14/12 0930	12/20/12
22800-008	UPRT19M	008	7	22801-233	Water	77	0.4	mg/L	12/14/12 0930	12/20/12
22800-009	UPRT20A	009	7	22801-234	Water	85	0.4	mg/L	12/14/12 0930	12/20/12
22800-010	UPRT20B	010	7	22801-235	Water	81	0.4	mg/L	12/14/12 0930	12/20/12
22800-011	UPRT20C	011	7	22801-236	Water	82	0.4	mg/L	12/14/12 0930	12/20/12
22800-012	UPRT20D	012	7	22801-237	Water	68	0.4	mg/L	12/14/12 0930	12/20/12
22800-013	UPRT20E	013	7	22801-238	Water	82	0.4	mg/L	12/14/12 0930	12/20/12
22800-014	UPRT20F	014	7	22801-239	Water	79	0.4	mg/L	12/14/12 0930	12/20/12
22800-015	UPRT20G	015	7	22801-240	Water	85	0.4	mg/L	12/14/12 0930	12/20/12
22800-016	UPRT21A	016	7	22801-241	Water	81	0.4	mg/L	12/14/12 0930	12/20/12
22800-017	UPRT21B	017	7	22801-242	Water	88	0.4	mg/L	12/14/12 0930	12/20/12
22800-018	UPRT21C	018	7	22801-243	Water	89	0.4	mg/L	12/14/12 0930	12/20/12
22800-019	UPRT21D	019	7	22801-244	Water	87	0.4	mg/L	12/14/12 0930	12/20/12
22800-020	UPRT21E	020	7	22801-245	Water	90	0.4	mg/L	12/14/12 0930	12/20/12
22800-021	UPRT21F	021	7	22801-246	Water	91	0.4	mg/L	12/14/12 0930	12/20/12
22800-022	UPRT21G	022	7	22801-247	Water	83	0.4	mg/L	12/14/12 0930	12/20/12
22800-023	UPRT22A	023	7	22801-248	Water	91	0.4	mg/L	12/14/12 0930	12/20/12
22800-024	UPRT22B	024	7	22801-249	Water	85	0.4	mg/L	12/14/12 0930	12/20/12
22800-000	Lab Control	000	14	22801-325	Water	94	0.4	mg/L	12/21/12 1100	01/28/13
22800-001	UPRT18I	001	14	22801-326	Water	91	0.4	mg/L	12/21/12 1100	01/28/13
22800-002	UPRT18H	002	14	22801-327	Water	97	0.4	mg/L	12/21/12 1100	01/28/13
22800-003	UPRT18J	003	14	22801-328	Water	94	0.4	mg/L	12/21/12 1100	01/28/13
22800-004	UPRT18K	004	14	22801-329	Water	90	0.4	mg/L	12/21/12 1100	01/28/13
22800-005	UPRT19J	005	14	22801-330	Water	90	0.4	mg/L	12/21/12 1100	01/28/13
22800-006	UPRT19K	006	14	22801-331	Water	91	0.4	mg/L	12/21/12 1100	01/28/13
22800-007	UPRT19L	007	14	22801-332	Water	88	0.4	mg/L	12/21/12 1100	01/28/13
22800-008	UPRT19M	008	14	22801-333	Water	87	0.4	mg/L	12/21/12 1100	01/28/13
22800-009	UPRT20A	009	14	22801-334	Water	100	0.4	mg/L	12/21/12 1100	01/28/13
22800-010	UPRT20B	010	14	22801-335	Water	110	0.4	mg/L	12/21/12 1100	01/28/13
22800-011	UPRT20C	011	14	22801-336	Water	110	0.4	mg/L	12/21/12 1100	01/28/13
22800-012	UPRT20D	012	14	22801-337	Water	87	0.4	mg/L	12/21/12 1100	01/28/13
22800-013	UPRT20E	013	14	22801-338	Water	88	0.4	mg/L	12/21/12 1100	01/28/13
22800-014	UPRT20F	014	14	22801-339	Water	96	0.4	mg/L	12/21/12 1100	01/28/13

TASK: Overlying Water Hardness Summary
METHOD: SW846 3rd Ed. 6020

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-015	UPRT20G	015	14	22801-340	Water	94	0.4	mg/L	12/21/12 1100	01/28/13
22800-016	UPRT21A	016	14	22801-341	Water	91	0.4	mg/L	12/21/12 1100	01/28/13
22800-017	UPRT21B	017	14	22801-342	Water	91	0.4	mg/L	12/21/12 1100	01/28/13
22800-018	UPRT21C	018	14	22801-343	Water	100	0.4	mg/L	12/21/12 1100	01/28/13
22800-019	UPRT21D	019	14	22801-344	Water	87	0.4	mg/L	12/21/12 1100	01/28/13
22800-020	UPRT21E	020	14	22801-345	Water	89	0.4	mg/L	12/21/12 1100	01/28/13
22800-021	UPRT21F	021	14	22801-346	Water	100	0.4	mg/L	12/21/12 1100	01/28/13
22800-022	UPRT21G	022	14	22801-347	Water	86	0.4	mg/L	12/21/12 1100	01/28/13
22800-023	UPRT22A	023	14	22801-348	Water	88	0.4	mg/L	12/21/12 1100	01/28/13
22800-024	UPRT22B	024	14	22801-349	Water	88	0.4	mg/L	12/21/12 1100	01/28/13
22800-000	Lab Control	000	21	22801-425	Water	89	0.4	mg/L	12/28/12 0915	01/28/13
22800-001	UPRT18I	001	21	22801-426	Water	87	0.4	mg/L	12/28/12 0915	01/28/13
22800-002	UPRT18H	002	21	22801-427	Water	89	0.4	mg/L	12/28/12 0915	01/28/13
22800-003	UPRT18J	003	21	22801-428	Water	88	0.4	mg/L	12/28/12 0915	01/28/13
22800-004	UPRT18K	004	21	22801-429	Water	78	0.4	mg/L	12/28/12 0915	01/28/13
22800-005	UPRT19J	005	21	22801-430	Water	94	0.4	mg/L	12/28/12 0915	01/28/13
22800-006	UPRT19K	006	21	22801-431	Water	89	0.4	mg/L	12/28/12 0915	01/28/13
22800-007	UPRT19L	007	21	22801-432	Water	87	0.4	mg/L	12/28/12 0915	01/28/13
22800-008	UPRT19M	008	21	22801-433	Water	87	0.4	mg/L	12/28/12 0915	01/28/13
22800-009	UPRT20A	009	21	22801-434	Water	91	0.4	mg/L	12/28/12 0915	01/28/13
22800-010	UPRT20B	010	21	22801-435	Water	87	0.4	mg/L	12/28/12 0915	01/28/13
22800-011	UPRT20C	011	21	22801-436	Water	99	0.4	mg/L	12/28/12 0915	01/28/13
22800-012	UPRT20D	012	21	22801-437	Water	93	0.4	mg/L	12/28/12 0915	01/28/13
22800-013	UPRT20E	013	21	22801-438	Water	91	0.4	mg/L	12/28/12 0915	01/28/13
22800-014	UPRT20F	014	21	22801-439	Water	94	0.4	mg/L	12/28/12 0915	01/28/13
22800-015	UPRT20G	015	21	22801-440	Water	85	0.4	mg/L	12/28/12 0915	01/28/13
22800-016	UPRT21A	016	21	22801-441	Water	89	0.4	mg/L	12/28/12 0915	01/28/13
22800-017	UPRT21B	017	21	22801-442	Water	96	0.4	mg/L	12/28/12 0915	01/28/13
22800-018	UPRT21C	018	21	22801-443	Water	93	0.4	mg/L	12/28/12 0915	01/28/13
22800-019	UPRT21D	019	21	22801-444	Water	87	0.4	mg/L	12/28/12 0915	01/28/13
22800-020	UPRT21E	020	21	22801-445	Water	87	0.4	mg/L	12/28/12 0915	01/28/13
22800-021	UPRT21F	021	21	22801-446	Water	82	0.4	mg/L	12/28/12 0915	01/28/13
22800-022	UPRT21G	022	21	22801-447	Water	84	0.4	mg/L	12/28/12 0915	01/28/13
22800-023	UPRT22A	023	21	22801-448	Water	85	0.4	mg/L	12/28/12 0915	01/28/13
22800-024	UPRT22B	024	21	22801-449	Water	90	0.4	mg/L	12/28/12 0915	01/28/13

TASK: Overlying Water Hardness Summary
METHOD: SW846 3rd Ed. 6020

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-000	Lab Control	000	28	22801-525	Water	92	0.4	mg/L	01/04/12 0930	01/28/13
22800-001	UPRT18I	001	28	22801-526	Water	87	0.4	mg/L	01/04/12 0930	01/28/13
22800-002	UPRT18H	002	28	22801-527	Water	88	0.4	mg/L	01/04/12 0930	01/28/13
22800-003	UPRT18J	003	28	22801-528	Water	90	0.4	mg/L	01/04/12 0930	01/28/13
22800-004	UPRT18K	004	28	22801-529	Water	89	0.4	mg/L	01/04/12 0930	01/28/13
22800-005	UPRT19J	005	28	22801-530	Water	110	0.4	mg/L	01/04/12 0930	01/28/13
22800-006	UPRT19K	006	28	22801-531	Water	87	0.4	mg/L	01/04/12 0930	01/28/13
22800-007	UPRT19L	007	28	22801-532	Water	88	0.4	mg/L	01/04/12 0930	01/28/13
22800-008	UPRT19M	008	28	22801-533	Water	87	0.4	mg/L	01/04/12 0930	01/28/13
22800-009	UPRT20A	009	28	22801-534	Water	83	0.4	mg/L	01/04/12 0930	01/28/13
22800-010	UPRT20B	010	28	22801-535	Water	87	0.4	mg/L	01/04/12 0930	01/28/13
22800-011	UPRT20C	011	28	22801-536	Water	91	0.4	mg/L	01/04/12 0930	01/28/13
22800-012	UPRT20D	012	28	22801-537	Water	95	0.4	mg/L	01/04/12 0930	01/28/13
22800-013	UPRT20E	013	28	22801-538	Water	87	0.4	mg/L	01/04/12 0930	01/28/13
22800-014	UPRT20F	014	28	22801-539	Water	89	0.4	mg/L	01/04/12 0930	01/28/13
22800-015	UPRT20G	015	28	22801-540	Water	84	0.4	mg/L	01/04/12 0930	01/28/13
22800-016	UPRT21A	016	28	22801-541	Water	88	0.4	mg/L	01/04/12 0930	01/28/13
22800-017	UPRT21B	017	28	22801-542	Water	84	0.4	mg/L	01/04/12 0930	01/28/13
22800-018	UPRT21C	018	28	22801-543	Water	90	0.4	mg/L	01/04/12 0930	01/28/13
22800-019	UPRT21D	019	28	22801-544	Water	85	0.4	mg/L	01/04/12 0930	01/28/13
22800-020	UPRT21E	020	28	22801-545	Water	87	0.4	mg/L	01/04/12 0930	01/28/13
22800-021	UPRT21F	021	28	22801-546	Water	82	0.4	mg/L	01/04/12 0930	01/28/13
22800-022	UPRT21G	022	28	22801-547	Water	82	0.4	mg/L	01/04/12 0930	01/28/13
22800-023	UPRT22A	023	28	22801-548	Water	86	0.4	mg/L	01/04/12 0930	01/28/13
22800-024	UPRT22B	024	28	22801-549	Water	84	0.4	mg/L	01/04/12 0930	01/28/13

STUDY: 22801
CLIENT: Windward Environmental, LLC.
PROJECT: Lower Passaic River Remedial Investigation
ASSAY: Hyalella azteca 28 Day Sediment Assay
TASK: Overlying Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-000	Lab Control	000	0	22801-150	Water	ND	0.1	mg/L as N	12/07/12 0830	01/02/13 1220
22800-001	UPRT18I	001	0	22801-151	Water	ND	0.1	mg/L as N	12/07/12 0830	01/02/13 1221
22800-002	UPRT18H	002	0	22801-152	Water	0.36	0.1	mg/L as N	12/07/12 0830	01/02/13 1222
22800-003	UPRT18J	003	0	22801-153	Water	0.7	0.1	mg/L as N	12/07/12 0830	01/02/13 1225
22800-004	UPRT18K	004	0	22801-154	Water	ND	0.1	mg/L as N	12/07/12 0830	01/02/13 1226
22800-005	UPRT19J	005	0	22801-155	Water	0.46	0.1	mg/L as N	12/07/12 0830	01/02/13 1229
22800-006	UPRT19K	006	0	22801-156	Water	0.34	0.1	mg/L as N	12/07/12 0830	01/02/13 1232
22800-007	UPRT19L	007	0	22801-157	Water	ND	0.1	mg/L as N	12/07/12 0830	01/02/13 1233
22800-008	UPRT19M	008	0	22801-158	Water	0.13	0.1	mg/L as N	12/07/12 0830	01/02/13 1236
22800-009	UPRT20A	009	0	22801-159	Water	0.29	0.1	mg/L as N	12/07/12 0830	01/02/13 1237
22800-010	UPRT20B	010	0	22801-160	Water	ND	0.1	mg/L as N	12/07/12 0830	01/02/13 1238
22800-011	UPRT20C	011	0	22801-161	Water	2.8	0.1	mg/L as N	12/07/12 0830	01/02/13 1239
22800-012	UPRT20D	012	0	22801-162	Water	2.2	0.1	mg/L as N	12/07/12 0830	01/02/13 1240
22800-013	UPRT20E	013	0	22801-163	Water	ND	0.1	mg/L as N	12/07/12 0830	01/02/13 1240
22800-014	UPRT20F	014	0	22801-164	Water	2.6	0.1	mg/L as N	12/07/12 0830	01/02/13 1241
22800-015	UPRT20G	015	0	22801-165	Water	0.96	0.1	mg/L as N	12/07/12 0830	01/02/13 1242
22800-016	UPRT21A	016	0	22801-166	Water	0.34	0.1	mg/L as N	12/07/12 0830	01/02/13 1243
22800-017	UPRT21B	017	0	22801-167	Water	9.2	0.1	mg/L as N	12/07/12 0830	01/02/13 1244
22800-018	UPRT21C	018	0	22801-168	Water	0.82	0.1	mg/L as N	12/07/12 0830	01/02/13 1247
22800-019	UPRT21D	019	0	22801-169	Water	0.29	0.1	mg/L as N	12/07/12 0830	01/02/13 1248
22800-020	UPRT21E	020	0	22801-170	Water	ND	0.1	mg/L as N	12/07/12 0830	01/02/13 1249
22800-021	UPRT21F	021	0	22801-171	Water	1.8	0.1	mg/L as N	12/07/12 0830	01/02/13 1250
22800-022	UPRT21G	022	0	22801-172	Water	ND	0.1	mg/L as N	12/07/12 0830	01/02/13 1251
22800-023	UPRT22A	023	0	22801-173	Water	ND	0.1	mg/L as N	12/07/12 0830	01/02/13 1251
22800-024	UPRT22B	024	0	22801-174	Water	ND	0.1	mg/L as N	12/07/12 0830	01/02/13 1252
22800-000	Lab Control	000	7	22801-250	Water	ND	0.1	mg/L as N	12/14/12 0930	12/18/12 1507
22800-001	UPRT18I	001	7	22801-251	Water	ND	0.1	mg/L as N	12/14/12 0930	12/18/12 1507
22800-002	UPRT18H	002	7	22801-252	Water	ND	0.1	mg/L as N	12/14/12 0930	12/18/12 1508
22800-003	UPRT18J	003	7	22801-253	Water	ND	0.1	mg/L as N	12/14/12 0930	12/18/12 1509
22800-004	UPRT18K	004	7	22801-254	Water	ND	0.1	mg/L as N	12/14/12 0930	12/18/12 1510
22800-005	UPRT19J	005	7	22801-255	Water	0.41	0.1	mg/L as N	12/14/12 0930	12/18/12 1511
22800-006	UPRT19K	006	7	22801-256	Water	ND	0.1	mg/L as N	12/14/12 0930	12/18/12 1514

TASK: Overlying Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-007	UPRT19L	007	7	22801-257	Water	ND	0.1	mg/L as N	12/14/12 0930	12/18/12 1515
22800-008	UPRT19M	008	7	22801-258	Water	ND	0.1	mg/L as N	12/14/12 0930	12/18/12 1516
22800-009	UPRT20A	009	7	22801-259	Water	ND	0.1	mg/L as N	12/14/12 0930	12/18/12 1517
22800-010	UPRT20B	010	7	22801-260	Water	ND	0.1	mg/L as N	12/14/12 0930	12/18/12 1517
22800-011	UPRT20C	011	7	22801-261	Water	ND	0.1	mg/L as N	12/14/12 0930	12/18/12 1518
22800-012	UPRT20D	012	7	22801-262	Water	ND	0.1	mg/L as N	12/14/12 0930	01/02/13 1324
22800-013	UPRT20E	013	7	22801-263	Water	ND	0.1	mg/L as N	12/14/12 0930	01/02/13 1326
22800-014	UPRT20F	014	7	22801-264	Water	0.13	0.1	mg/L as N	12/14/12 0930	01/02/13 1327
22800-015	UPRT20G	015	7	22801-265	Water	ND	0.1	mg/L as N	12/14/12 0930	01/02/13 1331
22800-016	UPRT21A	016	7	22801-266	Water	ND	0.1	mg/L as N	12/14/12 0930	01/02/13 1332
22800-017	UPRT21B	017	7	22801-267	Water	2.1	0.1	mg/L as N	12/14/12 0930	01/02/13 1332
22800-018	UPRT21C	018	7	22801-268	Water	ND	0.1	mg/L as N	12/14/12 0930	01/02/13 1333
22800-019	UPRT21D	019	7	22801-269	Water	0.12	0.1	mg/L as N	12/14/12 0930	01/02/13 1334
22800-020	UPRT21E	020	7	22801-270	Water	ND	0.1	mg/L as N	12/14/12 0930	01/02/13 1335
22800-021	UPRT21F	021	7	22801-271	Water	0.17	0.1	mg/L as N	12/14/12 0930	01/02/13 1336
22800-022	UPRT21G	022	7	22801-272	Water	ND	0.1	mg/L as N	12/14/12 0930	01/02/13 1336
22800-023	UPRT22A	023	7	22801-273	Water	ND	0.1	mg/L as N	12/14/12 0930	01/02/13 1337
22800-024	UPRT22B	024	7	22801-274	Water	ND	0.1	mg/L as N	12/14/12 0930	01/02/13 1338
22800-000	Lab Control	000	14	22801-350	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1230
22800-001	UPRT18I	001	14	22801-351	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1233
22800-002	UPRT18H	002	14	22801-352	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1233
22800-003	UPRT18J	003	14	22801-353	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1237
22800-004	UPRT18K	004	14	22801-354	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1238
22800-005	UPRT19J	005	14	22801-355	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1239
22800-006	UPRT19K	006	14	22801-356	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1240
22800-007	UPRT19L	007	14	22801-357	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1240
22800-008	UPRT19M	008	14	22801-358	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1241
22800-009	UPRT20A	009	14	22801-359	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1242
22800-010	UPRT20B	010	14	22801-360	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1243
22800-011	UPRT20C	011	14	22801-361	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1244
22800-012	UPRT20D	012	14	22801-362	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1244
22800-013	UPRT20E	013	14	22801-363	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1248
22800-014	UPRT20F	014	14	22801-364	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1249
22800-015	UPRT20G	015	14	22801-365	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1250
22800-016	UPRT21A	016	14	22801-366	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1250
22800-017	UPRT21B	017	14	22801-367	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1251

TASK: Overlying Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-018	UPRT21C	018	14	22801-368	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1252
22800-019	UPRT21D	019	14	22801-369	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1253
22800-020	UPRT21E	020	14	22801-370	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1259
22800-021	UPRT21F	021	14	22801-371	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1301
22800-022	UPRT21G	022	14	22801-372	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1302
22800-023	UPRT22A	023	14	22801-373	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1303
22800-024	UPRT22B	024	14	22801-374	Water	ND	0.1	mg/L as N	12/21/12 1100	01/04/13 1304
22800-000	Lab Control	000	21	22801-450	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1306
22800-001	UPRT18I	001	21	22801-451	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1309
22800-002	UPRT18H	002	21	22801-452	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1310
22800-003	UPRT18J	003	21	22801-453	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1311
22800-004	UPRT18K	004	21	22801-454	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1312
22800-005	UPRT19J	005	21	22801-455	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1313
22800-006	UPRT19K	006	21	22801-456	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1314
22800-007	UPRT19L	007	21	22801-457	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1314
22800-008	UPRT19M	008	21	22801-458	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1315
22800-009	UPRT20A	009	21	22801-459	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1316
22800-010	UPRT20B	010	21	22801-460	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1317
22800-011	UPRT20C	011	21	22801-461	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1320
22800-012	UPRT20D	012	21	22801-462	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1321
22800-013	UPRT20E	013	21	22801-463	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1325
22800-014	UPRT20F	014	21	22801-464	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1327
22800-015	UPRT20G	015	21	22801-465	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1328
22800-016	UPRT21A	016	21	22801-466	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1331
22800-017	UPRT21B	017	21	22801-467	Water	0.15	0.1	mg/L as N	12/28/12 0915	01/04/13 1332
22800-018	UPRT21C	018	21	22801-468	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1333
22800-019	UPRT21D	019	21	22801-469	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1334
22800-020	UPRT21E	020	21	22801-470	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1335
22800-021	UPRT21F	021	21	22801-471	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1336
22800-022	UPRT21G	022	21	22801-472	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1336
22800-023	UPRT22A	023	21	22801-473	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1337
22800-024	UPRT22B	024	21	22801-474	Water	ND	0.1	mg/L as N	12/28/12 0915	01/04/13 1338
22800-000	Lab Control	000	28	22801-550	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1319
22800-001	UPRT18I	001	28	22801-551	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1321
22800-002	UPRT18H	002	28	22801-552	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1322

TASK: Overlying Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-003	UPRT18J	003	28	22801-553	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1323
22800-004	UPRT18K	004	28	22801-554	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1324
22800-005	UPRT19J	005	28	22801-555	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1324
22800-006	UPRT19K	006	28	22801-556	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1325
22800-007	UPRT19L	007	28	22801-557	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1326
22800-008	UPRT19M	008	28	22801-558	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1330
22800-009	UPRT20A	009	28	22801-559	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1330
22800-010	UPRT20B	010	28	22801-560	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1331
22800-011	UPRT20C	011	28	22801-561	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1332
22800-012	UPRT20D	012	28	22801-562	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1333
22800-013	UPRT20E	013	28	22801-563	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1334
22800-014	UPRT20F	014	28	22801-564	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1335
22800-015	UPRT20G	015	28	22801-565	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1335
22800-016	UPRT21A	016	28	22801-566	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1336
22800-017	UPRT21B	017	28	22801-567	Water	0.1	0.1	mg/L as N	01/04/12 0930	01/16/13 1337
22800-018	UPRT21C	018	28	22801-568	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1341
22800-019	UPRT21D	019	28	22801-569	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1341
22800-020	UPRT21E	020	28	22801-570	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1345
22800-021	UPRT21F	021	28	22801-571	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1347
22800-022	UPRT21G	022	28	22801-572	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1348
22800-023	UPRT22A	023	28	22801-573	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1352
22800-024	UPRT22B	024	28	22801-574	Water	ND	0.1	mg/L as N	01/04/12 0930	01/16/13 1352

STUDY: 22801
CLIENT: Windward Environmental, LLC.
PROJECT: Lower Passaic River Remedial Investigation
ASSAY: Hyalella azteca 28 Day Sediment Assay
TASK: Pore Water Ammonia Summary
METHOD: SM 5310 C

Sample LAB ID	Field ID	Sample Number	Day	Ammonia					UNITS	SAMPLED	ANALYZED
				LAB ID	Total	Unionized	QLIMIT				
22800-000	Lab Control	000	0	22801-600	ND	0.0006	0.5	mg/L as N	12/07/12 1000	01/03/13 1534	
22800-001	UPRT18I	001	0	22801-601	1.2	0.0033	0.5	mg/L as N	12/07/12 1000	01/03/13 1537	
22800-002	UPRT18H	002	0	22801-602	1.8	0.0059	0.5	mg/L as N	12/07/12 1000	01/03/13 1538	
22800-003	UPRT18J	003	0	22801-603	3.2	0.0080	0.5	mg/L as N	12/07/12 1000	01/03/13 1539	
22800-004	UPRT18K	004	0	22801-604	0.97	0.0033	0.5	mg/L as N	12/07/12 1000	01/03/13 1540	
22800-005	UPRT19J	005	0	22801-605	3.9	0.0126	0.5	mg/L as N	12/07/12 1000	01/03/13 1541	
22800-006	UPRT19K	006	0	22801-606	4	0.0158	0.5	mg/L as N	12/07/12 1000	01/03/13 1542	
22800-007	UPRT19L	007	0	22801-607	1.9	0.0136	0.5	mg/L as N	12/07/12 1000	01/03/13 1542	
22800-008	UPRT19M	008	0	22801-608	0.55	0.0019	0.5	mg/L as N	12/07/12 1000	01/03/13 1543	
22800-009	UPRT20A	009	0	22801-609	7.9	0.0299	0.5	mg/L as N	12/07/12 1000	01/03/13 1544	
22800-010	UPRT20B	010	0	22801-610	2.8	0.0121	0.5	mg/L as N	12/07/12 1000	01/03/13 1545	
22800-011	UPRT20C	011	0	22801-611	10	0.0250	0.5	mg/L as N	12/07/12 1000	01/03/13 1548	
22800-012	UPRT20D	012	0	22801-612	7.2	0.0211	0.5	mg/L as N	12/07/12 1000	01/03/13 1549	
22800-013	UPRT20E	013	0	22801-613	18	0.1587	0.5	mg/L as N	12/07/12 1000	01/03/13 1550	
22800-014	UPRT20F	014	0	22801-614	14	0.0384	0.5	mg/L as N	12/07/12 1000	01/03/13 1436	
22800-015	UPRT20G	015	0	22801-615	7.1	0.0387	0.5	mg/L as N	12/07/12 1000	01/03/13 1439	
22800-016	UPRT21A	016	0	22801-616	1.8	0.0239	0.5	mg/L as N	12/07/12 1000	01/03/13 1439	
22800-017	UPRT21B	017	0	22801-617	30	0.0654	0.5	mg/L as N	12/07/12 1000	01/03/13 1443	
22800-018	UPRT21C	018	0	22801-618	4.8	0.0485	0.5	mg/L as N	12/07/12 1000	01/03/13 1444	
22800-019	UPRT21D	019	0	22801-619	4.4	0.0338	0.5	mg/L as N	12/07/12 1000	01/03/13 1445	
22800-020	UPRT21E	020	0	22801-620	0.96	0.0095	0.5	mg/L as N	12/07/12 1000	01/03/13 1446	
22800-021	UPRT21F	021	0	22801-621	9.4	0.0408	0.5	mg/L as N	12/07/12 1000	01/03/13 1446	
22800-022	UPRT21G	022	0	22801-622	0.76	0.0118	0.5	mg/L as N	12/07/12 1000	01/03/13 1447	
22800-023	UPRT22A	023	0	22801-623	ND	0.0044	0.5	mg/L as N	12/07/12 1000	01/03/13 1448	
22800-024	UPRT22B	024	0	22801-624	ND	0.0048	0.5	mg/L as N	12/07/12 1000	01/03/13 1449	
22800-000	Lab Control	000	28	22801-700	ND	0.0003	0.5	mg/L as N	01/04/13 1100	01/25/13 1049	
22800-001	UPRT18I	001	28	22801-701	1.1	0.0032	0.5	mg/L as N	01/04/13 1100	01/25/13 1049	
22800-002	UPRT18H	002	28	22801-702	1	0.0024	0.5	mg/L as N	01/04/13 1100	01/25/13 1050	
22800-003	UPRT18J	003	28	22801-703	1.5	0.0021	0.5	mg/L as N	01/04/13 1100	01/25/13 1051	
22800-004	UPRT18K	004	28	22801-704	ND	0.0023	0.5	mg/L as N	01/04/13 1100	01/25/13 1052	
22800-005	UPRT19J	005	28	22801-705	6.1	0.0029	0.5	mg/L as N	01/04/13 1100	01/25/13 1053	
22800-006	UPRT19K	006	28	22801-706	1.6	0.0038	0.5	mg/L as N	01/04/13 1100	01/25/13 1054	

TASK: Pore Water Ammonia Summary
METHOD: SM 5310 C

Sample LAB ID	Field ID	Sample Number	Day	Ammonia					UNITS	SAMPLED	ANALYZED
				LAB ID	Total	Unionized	QLIMIT				
22800-007	UPRT19L	007	28	22801-707	0.64	0.0039	0.5	mg/L as N	01/04/13 1100	01/25/13 1054	
22800-008	UPRT19M	008	28	22801-708	ND	0.0028	0.5	mg/L as N	01/04/13 1100	01/25/13 1055	
22800-009	UPRT20A	009	28	22801-709	4.1	0.0115	0.5	mg/L as N	01/04/13 1100	01/25/13 1059	
22800-010	UPRT20B	010	28	22801-710	3	0.0069	0.5	mg/L as N	01/04/13 1100	01/25/13 1100	
22800-011	UPRT20C	011	28	22801-711	9.6	0.0187	0.5	mg/L as N	01/04/13 1100	01/25/13 1100	
22800-012	UPRT20D	012	28	22801-712	10	0.0199	0.5	mg/L as N	01/04/13 1100	01/25/13 1101	
22800-013	UPRT20E	013	28	22801-713	ND	0.0029	0.5	mg/L as N	01/04/13 1100	01/25/13 1102	
22800-014	UPRT20F	014	28	22801-714	8.1	0.0144	0.5	mg/L as N	01/04/13 1100	01/25/13 1103	
22800-015	UPRT20G	015	28	22801-715	1.1	0.0039	0.5	mg/L as N	01/04/13 1100	01/25/13 1104	
22800-016	UPRT21A	016	28	22801-716	ND	0.0035	0.5	mg/L as N	01/04/13 1100	01/25/13 1110	
22800-017	UPRT21B	017	28	22801-717	20	0.0954	0.5	mg/L as N	01/04/13 1100	01/25/13 1112	
22800-018	UPRT21C	018	28	22801-718	4.8	0.0224	0.5	mg/L as N	01/04/13 1100	01/25/13 1113	
22800-019	UPRT21D	019	28	22801-719	0.71	0.0079	0.5	mg/L as N	01/04/13 1100	01/25/13 1114	
22800-020	UPRT21E	020	28	22801-720	ND	0.0027	0.5	mg/L as N	01/04/13 1100	01/25/13 1115	
22800-021	UPRT21F	021	28	22801-721	7.6	0.0245	0.5	mg/L as N	01/04/13 1100	01/25/13 1115	
22800-022	UPRT21G	022	28	22801-722	ND	0.0033	0.5	mg/L as N	01/04/13 1100	01/25/13 1116	
22800-023	UPRT22A	023	28	22801-723	ND	0.0030	0.5	mg/L as N	01/04/13 1100	01/25/13 1117	
22800-024	UPRT22B	024	28	22801-724	ND	0.0030	0.5	mg/L as N	01/04/13 1100	01/25/13 1121	

STUDY: 22801
CLIENT: Windward Environmental, LLC.
PROJECT: Lower Passaic River Remedial Investigation
ASSAY: Hyalella azteca 28 Day Sediment Assay
TASK: Overlying Water Total Organic Carbon Summary
METHOD: SM 5310 C

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-000	Lab Control	000	0	22801-175	Water	5.8	0.4	mg/L	12/07/12 0830	12/13/12
22800-001	UPRT18I	001	0	22801-176	Water	3.9	0.4	mg/L	12/07/12 0830	12/13/12
22800-002	UPRT18H	002	0	22801-177	Water	4	0.4	mg/L	12/07/12 0830	12/13/12
22800-003	UPRT18J	003	0	22801-178	Water	3.7	0.4	mg/L	12/07/12 0830	12/13/12
22800-004	UPRT18K	004	0	22801-179	Water	3.9	0.4	mg/L	12/07/12 0830	12/13/12
22800-005	UPRT19J	005	0	22801-180	Water	10	0.4	mg/L	12/07/12 0830	12/13/12
22800-006	UPRT19K	006	0	22801-181	Water	4	0.4	mg/L	12/07/12 0830	12/13/12
22800-007	UPRT19L	007	0	22801-182	Water	3.9	0.4	mg/L	12/07/12 0830	12/13/12
22800-008	UPRT19M	008	0	22801-183	Water	3.8	0.4	mg/L	12/07/12 0830	12/13/12
22800-009	UPRT20A	009	0	22801-184	Water	4.3	0.4	mg/L	12/07/12 0830	12/13/12
22800-010	UPRT20B	010	0	22801-185	Water	13	0.4	mg/L	12/07/12 0830	12/13/12
22800-011	UPRT20C	011	0	22801-186	Water	4.7	0.4	mg/L	12/07/12 0830	12/13/12
22800-012	UPRT20D	012	0	22801-187	Water	4.6	0.4	mg/L	12/07/12 0830	12/13/12
22800-013	UPRT20E	013	0	22801-188	Water	4.4	0.4	mg/L	12/07/12 0830	12/13/12
22800-014	UPRT20F	014	0	22801-189	Water	6.4	0.4	mg/L	12/07/12 0830	12/13/12
22800-015	UPRT20G	015	0	22801-190	Water	4.2	0.4	mg/L	12/07/12 0830	12/13/12
22800-016	UPRT21A	016	0	22801-191	Water	4.4	0.4	mg/L	12/07/12 0830	12/13/12
22800-017	UPRT21B	017	0	22801-192	Water	6.2	0.4	mg/L	12/07/12 0830	12/13/12
22800-018	UPRT21C	018	0	22801-193	Water	4.7	0.4	mg/L	12/07/12 0830	12/13/12
22800-019	UPRT21D	019	0	22801-194	Water	5.2	0.4	mg/L	12/07/12 0830	12/13/12
22800-020	UPRT21E	020	0	22801-195	Water	8.6	0.4	mg/L	12/07/12 0830	12/13/12
22800-021	UPRT21F	021	0	22801-196	Water	5.5	0.4	mg/L	12/07/12 0830	12/13/12
22800-022	UPRT21G	022	0	22801-197	Water	4	0.4	mg/L	12/07/12 0830	12/13/12
22800-023	UPRT22A	023	0	22801-198	Water	3.9	0.4	mg/L	12/07/12 0830	12/14/12
22800-024	UPRT22B	024	0	22801-199	Water	4.9	0.4	mg/L	12/07/12 0830	12/14/12
22800-000	Lab Control	000	28	22801-575	Water	6	0.4	mg/L	01/04/12 0930	01/07/13
22800-001	UPRT18I	001	28	22801-576	Water	4.3	0.4	mg/L	01/04/12 0930	01/07/13
22800-002	UPRT18H	002	28	22801-577	Water	4.1	0.4	mg/L	01/04/12 0930	01/07/13
22800-003	UPRT18J	003	28	22801-578	Water	4	0.4	mg/L	01/04/12 0930	01/07/13
22800-004	UPRT18K	004	28	22801-579	Water	3.8	0.4	mg/L	01/04/12 0930	01/07/13
22800-005	UPRT19J	005	28	22801-580	Water	4.2	0.4	mg/L	01/04/12 0930	01/07/13
22800-006	UPRT19K	006	28	22801-581	Water	4.4	0.4	mg/L	01/04/12 0930	01/07/13

TASK: Overlying Water Total Organic Carbon Summary
METHOD: SM 5310 C

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-007	UPRT19L	007	28	22801-582	Water	4.2	0.4	mg/L	01/04/12 0930	01/08/13
22800-008	UPRT19M	008	28	22801-583	Water	3.9	0.4	mg/L	01/04/12 0930	01/08/13
22800-009	UPRT20A	009	28	22801-584	Water	4	0.4	mg/L	01/04/12 0930	01/08/13
22800-010	UPRT20B	010	28	22801-585	Water	4.1	0.4	mg/L	01/04/12 0930	01/08/13
22800-011	UPRT20C	011	28	22801-586	Water	4.4	0.4	mg/L	01/04/12 0930	01/08/13
22800-012	UPRT20D	012	28	22801-587	Water	4.4	0.4	mg/L	01/04/12 0930	01/08/13
22800-013	UPRT20E	013	28	22801-588	Water	4	0.4	mg/L	01/04/12 0930	01/08/13
22800-014	UPRT20F	014	28	22801-589	Water	4.2	0.4	mg/L	01/04/12 0930	01/08/13
22800-015	UPRT20G	015	28	22801-590	Water	4.2	0.4	mg/L	01/04/12 0930	01/08/13
22800-016	UPRT21A	016	28	22801-591	Water	3.9	0.4	mg/L	01/04/12 0930	01/08/13
22800-017	UPRT21B	017	28	22801-592	Water	7.4	0.4	mg/L	01/04/12 0930	01/08/13
22800-018	UPRT21C	018	28	22801-593	Water	4.1	0.4	mg/L	01/04/12 0930	01/08/13
22800-019	UPRT21D	019	28	22801-594	Water	3.8	0.4	mg/L	01/04/12 0930	01/08/13
22800-020	UPRT21E	020	28	22801-595	Water	3.8	0.4	mg/L	01/04/12 0930	01/08/13
22800-021	UPRT21F	021	28	22801-596	Water	5.3	0.4	mg/L	01/04/12 0930	01/08/13
22800-022	UPRT21G	022	28	22801-597	Water	4.3	0.4	mg/L	01/04/12 0930	01/08/13
22800-023	UPRT22A	023	28	22801-598	Water	4.2	0.4	mg/L	01/04/12 0930	01/08/13
22800-024	UPRT22B	024	28	22801-599	Water	4.3	0.4	mg/L	01/04/12 0930	01/08/13

Sample Pore Water Analysis

Day 0

Study: 22801.

Client: Windward Environmental, LLC

**Project: Lower Passaic River Remedial
Investigation**

Field ID	Receipt Number	Sample Number	pH (SU)	temperature (°C)
Lab Control	22800-000	000	6.89	20-22 (3pm 01/04/13)
UPRT18I	22800-001	001	6.81	21
UPRT18H	22800-002	002	6.89	
UPRT18J	22800-003	003	6.77	
UPRT18K	22800-004	004	6.91	
UPRT19J	22800-005	005	6.88	
UPRT19K	22800-006	006	6.97	
UPRT19L	22800-007	007	7.23	
UPRT19M	22800-008	008	6.92	
UPRT20A	22800-009	009	6.95	
UPRT20B	22800-010	010	7.01	
UPRT20C	22800-011	011	6.77	
UPRT20D	22800-012	012	6.84	
UPRT20E	22800-013	013	7.32	
UPRT20F	22800-014	014	6.81	
UPRT20G	22800-015	015	7.11	
UPRT21A	22800-016	016	7.50	
UPRT21B	22800-017	017	6.71	
UPRT21C	22800-018	018	7.38	
UPRT21D	22800-019	019	7.26	
UPRT21E	22800-020	020	7.37	
UPRT21F	22800-021	021	7.01	
UPRT21G	22800-022	022	7.57	
UPRT22A	22800-023	023	7.62	
UPRT22B	22800-024	024	7.66	✓
Date:	Q12/07/12	Thermometer ID:	T-210	
Initial:	AM	pH Meter ID:	470	

P:\GENERAL PROJECTS\RPT-active\ERA 22800 Windward Environmental\LabForms\Sample Pore Water Analysis.wpd

Sample Pore Water Analysis

Day 10 ²⁸₂₈

Study: 22801

Client: Windward Environmental, LLC

**Project: Lower Passaic River Remedial
Investigation**

Field ID	Receipt Number	Sample Number	pH (SU)	temperature (°C)
Lab Control	22800-000	000	6.38	22
UPRT18I	22800-001	001	6.80	
UPRT18H	22800-002	002	6.72	
UPRT18J	22800-003	003	6.48	
UPRT18K	22800-004	004	7.31	
UPRT19J	22800-005	005	6.01	
UPRT19K	22800-006	006	6.72	
UPRT19L	22800-007	007	7.13	
UPRT19M	22800-008	008	7.40	
UPRT20A	22800-009	009	6.79	
UPRT20B	22800-010	010	6.70	
UPRT20C	22800-011	011	6.63	
UPRT20D	22800-012	012	6.64	
UPRT20E	22800-013	013	7.41	
UPRT20F	22800-014	014	6.59	
UPRT20G	22800-015	015	6.89	
UPRT21A	22800-016	016	7.49	
UPRT21B	22800-017	017	7.02	
UPRT21C	22800-018	018	7.01	
UPRT21D	22800-019	019	7.39	
UPRT21E	22800-020	020	7.37	
UPRT21F	22800-021	021	6.85	
UPRT21G	22800-022	022	7.46	
UPRT22A	22800-023	023	7.42	
UPRT22B	22800-024	024	7.43	

Date: 01/04/13
Initial: *AM*

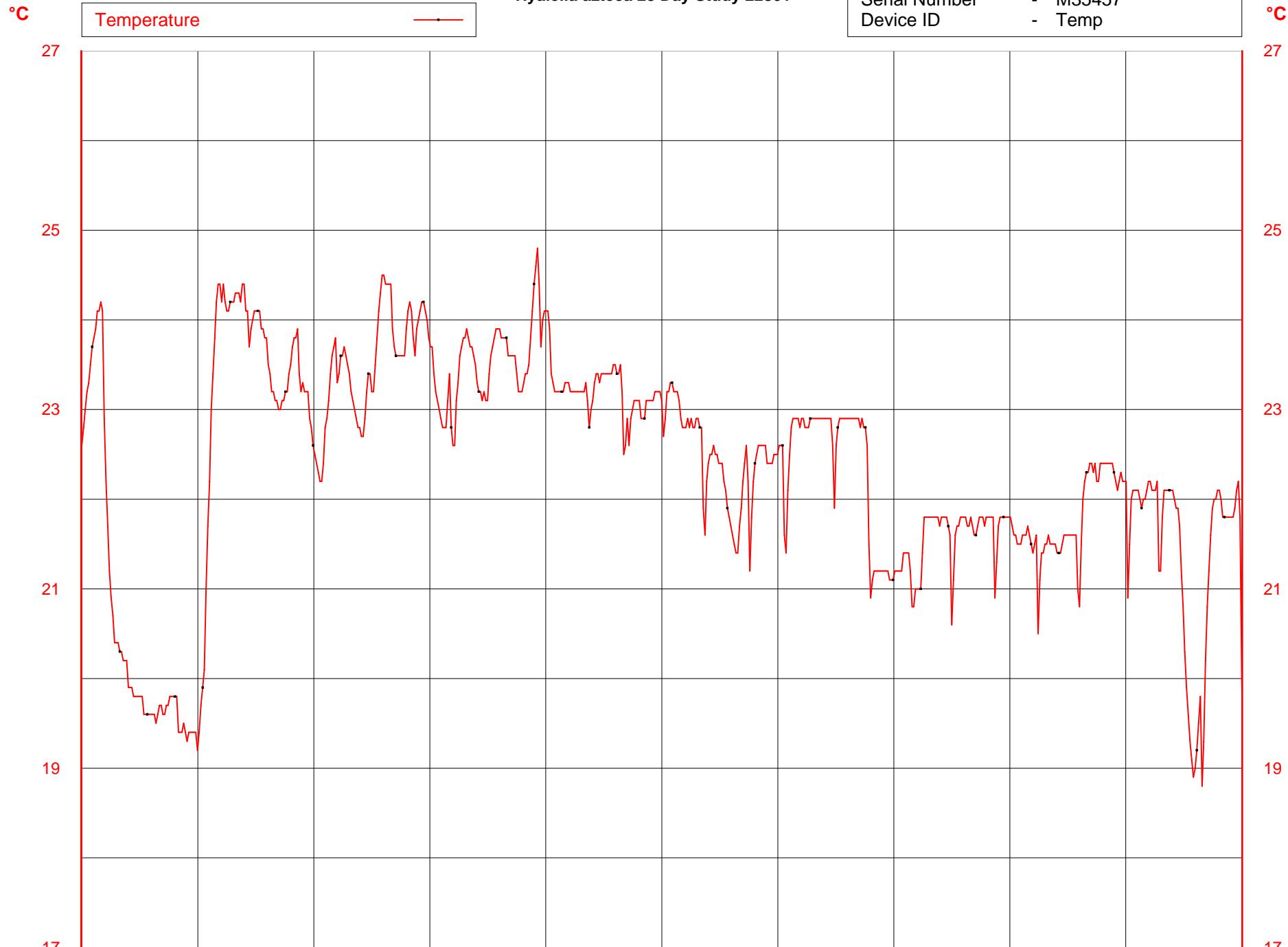
Thermometer ID: T-210
pH Meter ID: #1097 470

01/04/13

P:\GENERAL PROJECTS\RPT-active\ERA 22800 Windward Environmental\LabForms\Sample Pore Water Analysis.wpd

Hyalella azteca 28 Day Study 22801

Device - MicroPoint1
Serial Number - M35457
Device ID - Temp



12:00:00 PM
Dec 07, 2012

02:24:00 AM
Dec 13, 2012

04:48:00 PM
Dec 18, 2012

07:12:00 AM
Dec 24, 2012

09:36:00 PM
Dec 29, 2012

12:00:00 PM
Jan 04, 2013

Report Name: MicroPoint1 Statistics
Report Date: Jan 14, 2013 03:59:50 PM EST
File Name: P:\TELATEMP\M35457 10-24-12 to 01-14-13.csv
Title: Hyalella azteca 28 Day Study 22801
Device: MicroPoint1 - Temperature Recorder
Hardware Revision: REV2 (64K)
Serial Number: M35457
Device ID: Temp
Data Start Date: Dec 07, 2012 12:59:00 PM EDT
Data End Date: Jan 04, 2013 11:59:00 AM EDT
Reading Rate: 1 Hour
Readings: 1052 to 1723 of 1967
Last Calibration Date: Jul 06, 2012
Next Calibration Date: Jul 06, 2013

Channel 1 - Temperature

Minimum	.....	18.8 °C
Maximum	.....	24.8 °C
Average	.....	22.37976 °C
Standard Deviation	.....	1.263145 °C
Mean Kinetic Temperature	.....	22.463 °C

Report Name: MicroPoint1 Data Table
 Report Date: Jan 14, 2013 03:59:37 PM EST
 File Name: P:\TELATEMP\M35457 10-24-12 to 01-14-13.csv
 Title: Hyalella azteca 28 Day Study 22801
 Device: MicroPoint1 - Temperature Recorder
 Hardware Revision: REV2 (64K)
 Serial Number: M35457
 Device ID: Temp
 Data Start Date: Dec 07, 2012 12:59:00 PM EDT
 Data End Date: Jan 04, 2013 11:59:00 AM EDT
 Reading Rate: 1 Hour
 Readings: 1052 to 1723 of 1967
 Last Calibration Date: Jul 06, 2012
 Next Calibration Date: Jul 06, 2013

<u>Reading</u>	<u>Date and Time (EDT)</u>	<u>Temperature</u>	<u>Annotation</u>
1052	Dec 07, 2012 12:59:00 PM	22.800	°C
1053	Dec 07, 2012 01:59:00 PM	23.000	°C
1054	Dec 07, 2012 02:59:00 PM	23.200	°C
1055	Dec 07, 2012 03:59:00 PM	23.300	°C
1056	Dec 07, 2012 04:59:00 PM	23.500	°C
1057	Dec 07, 2012 05:59:00 PM	23.700	°C
1058	Dec 07, 2012 06:59:00 PM	23.800	°C
1059	Dec 07, 2012 07:59:00 PM	23.900	°C
1060	Dec 07, 2012 08:59:00 PM	24.100	°C
1061	Dec 07, 2012 09:59:00 PM	24.100	°C
1062	Dec 07, 2012 10:59:00 PM	24.200	°C
1063	Dec 07, 2012 11:59:00 PM	24.100	°C
1064	Dec 08, 2012 12:59:00 AM	22.900	°C
1065	Dec 08, 2012 01:59:00 AM	22.200	°C
1066	Dec 08, 2012 02:59:00 AM	21.700	°C
1067	Dec 08, 2012 03:59:00 AM	21.200	°C
1068	Dec 08, 2012 04:59:00 AM	20.900	°C
1069	Dec 08, 2012 05:59:00 AM	20.700	°C
1070	Dec 08, 2012 06:59:00 AM	20.400	°C
1071	Dec 08, 2012 07:59:00 AM	20.400	°C
1072	Dec 08, 2012 08:59:00 AM	20.400	°C
1073	Dec 08, 2012 09:59:00 AM	20.300	°C
1074	Dec 08, 2012 10:59:00 AM	20.300	°C
1075	Dec 08, 2012 11:59:00 AM	20.200	°C
1076	Dec 08, 2012 12:59:00 PM	20.200	°C
1077	Dec 08, 2012 01:59:00 PM	20.200	°C
1078	Dec 08, 2012 02:59:00 PM	19.900	°C
1079	Dec 08, 2012 03:59:00 PM	19.900	°C
1080	Dec 08, 2012 04:59:00 PM	19.900	°C
1081	Dec 08, 2012 05:59:00 PM	19.800	°C
1082	Dec 08, 2012 06:59:00 PM	19.800	°C
1083	Dec 08, 2012 07:59:00 PM	19.800	°C
1084	Dec 08, 2012 08:59:00 PM	19.800	°C
1085	Dec 08, 2012 09:59:00 PM	19.800	°C
1086	Dec 08, 2012 10:59:00 PM	19.800	°C
1087	Dec 08, 2012 11:59:00 PM	19.600	°C
1088	Dec 09, 2012 12:59:00 AM	19.600	°C
1089	Dec 09, 2012 01:59:00 AM	19.600	°C
1090	Dec 09, 2012 02:59:00 AM	19.600	°C
1091	Dec 09, 2012 03:59:00 AM	19.600	°C
1092	Dec 09, 2012 04:59:00 AM	19.600	°C
1093	Dec 09, 2012 05:59:00 AM	19.600	°C
1094	Dec 09, 2012 06:59:00 AM	19.500	°C
1095	Dec 09, 2012 07:59:00 AM	19.600	°C
1096	Dec 09, 2012 08:59:00 AM	19.700	°C
1097	Dec 09, 2012 09:59:00 AM	19.700	°C
1098	Dec 09, 2012 10:59:00 AM	19.600	°C
1099	Dec 09, 2012 11:59:00 AM	19.600	°C
1100	Dec 09, 2012 12:59:00 PM	19.700	°C
1101	Dec 09, 2012 01:59:00 PM	19.700	°C
1102	Dec 09, 2012 02:59:00 PM	19.800	°C
1103	Dec 09, 2012 03:59:00 PM	19.800	°C
1104	Dec 09, 2012 04:59:00 PM	19.800	°C
1105	Dec 09, 2012 05:59:00 PM	19.800	°C
1106	Dec 09, 2012 06:59:00 PM	19.800	°C
1107	Dec 09, 2012 07:59:00 PM	19.400	°C
1108	Dec 09, 2012 08:59:00 PM	19.400	°C
1109	Dec 09, 2012 09:59:00 PM	19.400	°C
1110	Dec 09, 2012 10:59:00 PM	19.500	°C
1111	Dec 09, 2012 11:59:00 PM	19.500	°C
1112	Dec 10, 2012 12:59:00 AM	19.300	°C

8 day Hyalella azteca Survival and Growth Sediment Toxicity.
 Lower Passaic River Remedial Investigation. ES1500 Study 22801. January 2013.

1113	Dec 10, 2012 01:59:00 AM	19.400	°C
1114	Dec 10, 2012 02:59:00 AM	19.400	°C
1115	Dec 10, 2012 03:59:00 AM	19.400	°C
1116	Dec 10, 2012 04:59:00 AM	19.400	°C
1117	Dec 10, 2012 05:59:00 AM	19.400	°C
1118	Dec 10, 2012 06:59:00 AM	19.200	°C
1119	Dec 10, 2012 07:59:00 AM	19.400	°C
1120	Dec 10, 2012 08:59:00 AM	19.700	°C
1121	Dec 10, 2012 09:59:00 AM	19.900	°C
1122	Dec 10, 2012 10:59:00 AM	20.100	°C
1123	Dec 10, 2012 11:59:00 AM	21.000	°C
1124	Dec 10, 2012 12:59:00 PM	21.700	°C
1125	Dec 10, 2012 01:59:00 PM	22.200	°C
1126	Dec 10, 2012 02:59:00 PM	23.000	°C
1127	Dec 10, 2012 03:59:00 PM	23.400	°C
1128	Dec 10, 2012 04:59:00 PM	23.800	°C
1129	Dec 10, 2012 05:59:00 PM	24.200	°C
1130	Dec 10, 2012 06:59:00 PM	24.400	°C
1131	Dec 10, 2012 07:59:00 PM	24.400	°C
1132	Dec 10, 2012 08:59:00 PM	24.200	°C
1133	Dec 10, 2012 09:59:00 PM	24.400	°C
1134	Dec 10, 2012 10:59:00 PM	24.200	°C
1135	Dec 10, 2012 11:59:00 PM	24.100	°C
1136	Dec 11, 2012 12:59:00 AM	24.100	°C
1137	Dec 11, 2012 01:59:00 AM	24.200	°C
1138	Dec 11, 2012 02:59:00 AM	24.200	°C
1139	Dec 11, 2012 03:59:00 AM	24.200	°C
1140	Dec 11, 2012 04:59:00 AM	24.300	°C
1141	Dec 11, 2012 05:59:00 AM	24.300	°C
1142	Dec 11, 2012 06:59:00 AM	24.300	°C
1143	Dec 11, 2012 07:59:00 AM	24.200	°C
1144	Dec 11, 2012 08:59:00 AM	24.400	°C
1145	Dec 11, 2012 09:59:00 AM	24.400	°C
1146	Dec 11, 2012 10:59:00 AM	24.100	°C
1147	Dec 11, 2012 11:59:00 AM	24.100	°C
1148	Dec 11, 2012 12:59:00 PM	23.700	°C
1149	Dec 11, 2012 01:59:00 PM	23.900	°C
1150	Dec 11, 2012 02:59:00 PM	24.000	°C
1151	Dec 11, 2012 03:59:00 PM	24.100	°C
1152	Dec 11, 2012 04:59:00 PM	24.100	°C
1153	Dec 11, 2012 05:59:00 PM	24.100	°C
1154	Dec 11, 2012 06:59:00 PM	24.100	°C
1155	Dec 11, 2012 07:59:00 PM	23.900	°C
1156	Dec 11, 2012 08:59:00 PM	23.900	°C
1157	Dec 11, 2012 09:59:00 PM	23.800	°C
1158	Dec 11, 2012 10:59:00 PM	23.800	°C
1159	Dec 11, 2012 11:59:00 PM	23.500	°C
1160	Dec 12, 2012 12:59:00 AM	23.400	°C
1161	Dec 12, 2012 01:59:00 AM	23.200	°C
1162	Dec 12, 2012 02:59:00 AM	23.200	°C
1163	Dec 12, 2012 03:59:00 AM	23.100	°C
1164	Dec 12, 2012 04:59:00 AM	23.100	°C
1165	Dec 12, 2012 05:59:00 AM	23.000	°C
1166	Dec 12, 2012 06:59:00 AM	23.000	°C
1167	Dec 12, 2012 07:59:00 AM	23.100	°C
1168	Dec 12, 2012 08:59:00 AM	23.100	°C
1169	Dec 12, 2012 09:59:00 AM	23.200	°C
1170	Dec 12, 2012 10:59:00 AM	23.200	°C
1171	Dec 12, 2012 11:59:00 AM	23.400	°C
1172	Dec 12, 2012 12:59:00 PM	23.500	°C
1173	Dec 12, 2012 01:59:00 PM	23.700	°C
1174	Dec 12, 2012 02:59:00 PM	23.800	°C
1175	Dec 12, 2012 03:59:00 PM	23.800	°C
1176	Dec 12, 2012 04:59:00 PM	23.900	°C
1177	Dec 12, 2012 05:59:00 PM	23.400	°C
1178	Dec 12, 2012 06:59:00 PM	23.200	°C
1179	Dec 12, 2012 07:59:00 PM	23.300	°C
1180	Dec 12, 2012 08:59:00 PM	23.200	°C
1181	Dec 12, 2012 09:59:00 PM	23.200	°C
1182	Dec 12, 2012 10:59:00 PM	23.200	°C
1183	Dec 12, 2012 11:59:00 PM	22.900	°C
1184	Dec 13, 2012 12:59:00 AM	22.800	°C
1185	Dec 13, 2012 01:59:00 AM	22.600	°C
1186	Dec 13, 2012 02:59:00 AM	22.500	°C
1187	Dec 13, 2012 03:59:00 AM	22.400	°C
1188	Dec 13, 2012 04:59:00 AM	22.300	°C
1189	Dec 13, 2012 05:59:00 AM	22.100	°C
1190	Dec 13, 2012 06:59:00 AM	22.200	°C

8 Day Hyatella azteca Survival and Growth Sediment Toxicity
Lower Passaic River Remedial Investigation. ESI Study 22801. January 2013.

1191	Dec 13, 2012 07:59:00 AM	22.400	°C
1192	Dec 13, 2012 08:59:00 AM	22.800	°C
1193	Dec 13, 2012 09:59:00 AM	22.900	°C
1194	Dec 13, 2012 10:59:00 AM	23.100	°C
1195	Dec 13, 2012 11:59:00 AM	23.400	°C
1196	Dec 13, 2012 12:59:00 PM	23.600	°C
1197	Dec 13, 2012 01:59:00 PM	23.700	°C
1198	Dec 13, 2012 02:59:00 PM	23.800	°C
1199	Dec 13, 2012 03:59:00 PM	23.300	°C
1200	Dec 13, 2012 04:59:00 PM	23.400	°C
1201	Dec 13, 2012 05:59:00 PM	23.600	°C
1202	Dec 13, 2012 06:59:00 PM	23.600	°C
1203	Dec 13, 2012 07:59:00 PM	23.700	°C
1204	Dec 13, 2012 08:59:00 PM	23.600	°C
1205	Dec 13, 2012 09:59:00 PM	23.500	°C
1206	Dec 13, 2012 10:59:00 PM	23.400	°C
1207	Dec 13, 2012 11:59:00 PM	23.200	°C
1208	Dec 14, 2012 12:59:00 AM	23.100	°C
1209	Dec 14, 2012 01:59:00 AM	23.000	°C
1210	Dec 14, 2012 02:59:00 AM	22.900	°C
1211	Dec 14, 2012 03:59:00 AM	22.800	°C
1212	Dec 14, 2012 04:59:00 AM	22.800	°C
1213	Dec 14, 2012 05:59:00 AM	22.700	°C
1214	Dec 14, 2012 06:59:00 AM	22.700	°C
1215	Dec 14, 2012 07:59:00 AM	22.900	°C
1216	Dec 14, 2012 08:59:00 AM	23.200	°C
1217	Dec 14, 2012 09:59:00 AM	23.400	°C
1218	Dec 14, 2012 10:59:00 AM	23.400	°C
1219	Dec 14, 2012 11:59:00 AM	23.200	°C
1220	Dec 14, 2012 12:59:00 PM	23.200	°C
1221	Dec 14, 2012 01:59:00 PM	23.500	°C
1222	Dec 14, 2012 02:59:00 PM	23.800	°C
1223	Dec 14, 2012 03:59:00 PM	24.100	°C
1224	Dec 14, 2012 04:59:00 PM	24.300	°C
1225	Dec 14, 2012 05:59:00 PM	24.500	°C
1226	Dec 14, 2012 06:59:00 PM	24.500	°C
1227	Dec 14, 2012 07:59:00 PM	24.400	°C
1228	Dec 14, 2012 08:59:00 PM	24.400	°C
1229	Dec 14, 2012 09:59:00 PM	24.400	°C
1230	Dec 14, 2012 10:59:00 PM	24.400	°C
1231	Dec 14, 2012 11:59:00 PM	23.900	°C
1232	Dec 15, 2012 12:59:00 AM	23.700	°C
1233	Dec 15, 2012 01:59:00 AM	23.600	°C
1234	Dec 15, 2012 02:59:00 AM	23.600	°C
1235	Dec 15, 2012 03:59:00 AM	23.600	°C
1236	Dec 15, 2012 04:59:00 AM	23.600	°C
1237	Dec 15, 2012 05:59:00 AM	23.600	°C
1238	Dec 15, 2012 06:59:00 AM	23.600	°C
1239	Dec 15, 2012 07:59:00 AM	23.900	°C
1240	Dec 15, 2012 08:59:00 AM	24.100	°C
1241	Dec 15, 2012 09:59:00 AM	24.200	°C
1242	Dec 15, 2012 10:59:00 AM	24.100	°C
1243	Dec 15, 2012 11:59:00 AM	23.800	°C
1244	Dec 15, 2012 12:59:00 PM	23.600	°C
1245	Dec 15, 2012 01:59:00 PM	23.900	°C
1246	Dec 15, 2012 02:59:00 PM	24.000	°C
1247	Dec 15, 2012 03:59:00 PM	24.100	°C
1248	Dec 15, 2012 04:59:00 PM	24.200	°C
1249	Dec 15, 2012 05:59:00 PM	24.200	°C
1250	Dec 15, 2012 06:59:00 PM	24.100	°C
1251	Dec 15, 2012 07:59:00 PM	24.000	°C
1252	Dec 15, 2012 08:59:00 PM	23.800	°C
1253	Dec 15, 2012 09:59:00 PM	23.700	°C
1254	Dec 15, 2012 10:59:00 PM	23.700	°C
1255	Dec 15, 2012 11:59:00 PM	23.400	°C
1256	Dec 16, 2012 12:59:00 AM	23.200	°C
1257	Dec 16, 2012 01:59:00 AM	23.100	°C
1258	Dec 16, 2012 02:59:00 AM	23.000	°C
1259	Dec 16, 2012 03:59:00 AM	22.900	°C
1260	Dec 16, 2012 04:59:00 AM	22.800	°C
1261	Dec 16, 2012 05:59:00 AM	22.800	°C
1262	Dec 16, 2012 06:59:00 AM	22.800	°C
1263	Dec 16, 2012 07:59:00 AM	23.100	°C
1264	Dec 16, 2012 08:59:00 AM	23.400	°C
1265	Dec 16, 2012 09:59:00 AM	22.800	°C
1266	Dec 16, 2012 10:59:00 AM	22.600	°C
1267	Dec 16, 2012 11:59:00 AM	22.600	°C
1268	Dec 16, 2012 12:59:00 PM	23.100	°C

8 Day Hyatella azteca Survival and Growth Sediment Toxicity
Lower Passaic River Remedial Investigation. ESI Study 22801. January 2013.

1269	Dec 16, 2012 01:59:00 PM	23.300	°C
1270	Dec 16, 2012 02:59:00 PM	23.600	°C
1271	Dec 16, 2012 03:59:00 PM	23.700	°C
1272	Dec 16, 2012 04:59:00 PM	23.800	°C
1273	Dec 16, 2012 05:59:00 PM	23.800	°C
1274	Dec 16, 2012 06:59:00 PM	23.900	°C
1275	Dec 16, 2012 07:59:00 PM	23.800	°C
1276	Dec 16, 2012 08:59:00 PM	23.700	°C
1277	Dec 16, 2012 09:59:00 PM	23.700	°C
1278	Dec 16, 2012 10:59:00 PM	23.600	°C
1279	Dec 16, 2012 11:59:00 PM	23.500	°C
1280	Dec 17, 2012 12:59:00 AM	23.300	°C
1281	Dec 17, 2012 01:59:00 AM	23.200	°C
1282	Dec 17, 2012 02:59:00 AM	23.200	°C
1283	Dec 17, 2012 03:59:00 AM	23.100	°C
1284	Dec 17, 2012 04:59:00 AM	23.200	°C
1285	Dec 17, 2012 05:59:00 AM	23.100	°C
1286	Dec 17, 2012 06:59:00 AM	23.100	°C
1287	Dec 17, 2012 07:59:00 AM	23.400	°C
1288	Dec 17, 2012 08:59:00 AM	23.600	°C
1289	Dec 17, 2012 09:59:00 AM	23.700	°C
1290	Dec 17, 2012 10:59:00 AM	23.800	°C
1291	Dec 17, 2012 11:59:00 AM	23.900	°C
1292	Dec 17, 2012 12:59:00 PM	23.900	°C
1293	Dec 17, 2012 01:59:00 PM	23.900	°C
1294	Dec 17, 2012 02:59:00 PM	23.800	°C
1295	Dec 17, 2012 03:59:00 PM	23.800	°C
1296	Dec 17, 2012 04:59:00 PM	23.800	°C
1297	Dec 17, 2012 05:59:00 PM	23.800	°C
1298	Dec 17, 2012 06:59:00 PM	23.600	°C
1299	Dec 17, 2012 07:59:00 PM	23.600	°C
1300	Dec 17, 2012 08:59:00 PM	23.600	°C
1301	Dec 17, 2012 09:59:00 PM	23.600	°C
1302	Dec 17, 2012 10:59:00 PM	23.600	°C
1303	Dec 17, 2012 11:59:00 PM	23.400	°C
1304	Dec 18, 2012 12:59:00 AM	23.200	°C
1305	Dec 18, 2012 01:59:00 AM	23.200	°C
1306	Dec 18, 2012 02:59:00 AM	23.200	°C
1307	Dec 18, 2012 03:59:00 AM	23.300	°C
1308	Dec 18, 2012 04:59:00 AM	23.400	°C
1309	Dec 18, 2012 05:59:00 AM	23.400	°C
1310	Dec 18, 2012 06:59:00 AM	23.500	°C
1311	Dec 18, 2012 07:59:00 AM	23.800	°C
1312	Dec 18, 2012 08:59:00 AM	24.100	°C
1313	Dec 18, 2012 09:59:00 AM	24.400	°C
1314	Dec 18, 2012 10:59:00 AM	24.600	°C
1315	Dec 18, 2012 11:59:00 AM	24.800	°C
1316	Dec 18, 2012 12:59:00 PM	24.400	°C
1317	Dec 18, 2012 01:59:00 PM	23.700	°C
1318	Dec 18, 2012 02:59:00 PM	24.000	°C
1319	Dec 18, 2012 03:59:00 PM	24.100	°C
1320	Dec 18, 2012 04:59:00 PM	24.100	°C
1321	Dec 18, 2012 05:59:00 PM	24.100	°C
1322	Dec 18, 2012 06:59:00 PM	23.900	°C
1323	Dec 18, 2012 07:59:00 PM	23.400	°C
1324	Dec 18, 2012 08:59:00 PM	23.300	°C
1325	Dec 18, 2012 09:59:00 PM	23.200	°C
1326	Dec 18, 2012 10:59:00 PM	23.200	°C
1327	Dec 18, 2012 11:59:00 PM	23.200	°C
1328	Dec 19, 2012 12:59:00 AM	23.200	°C
1329	Dec 19, 2012 01:59:00 AM	23.200	°C
1330	Dec 19, 2012 02:59:00 AM	23.200	°C
1331	Dec 19, 2012 03:59:00 AM	23.300	°C
1332	Dec 19, 2012 04:59:00 AM	23.300	°C
1333	Dec 19, 2012 05:59:00 AM	23.300	°C
1334	Dec 19, 2012 06:59:00 AM	23.200	°C
1335	Dec 19, 2012 07:59:00 AM	23.200	°C
1336	Dec 19, 2012 08:59:00 AM	23.200	°C
1337	Dec 19, 2012 09:59:00 AM	23.200	°C
1338	Dec 19, 2012 10:59:00 AM	23.200	°C
1339	Dec 19, 2012 11:59:00 AM	23.200	°C
1340	Dec 19, 2012 12:59:00 PM	23.200	°C
1341	Dec 19, 2012 01:59:00 PM	23.200	°C
1342	Dec 19, 2012 02:59:00 PM	23.200	°C
1343	Dec 19, 2012 03:59:00 PM	23.300	°C
1344	Dec 19, 2012 04:59:00 PM	23.100	°C
1345	Dec 19, 2012 05:59:00 PM	23.800	°C
1346	Dec 19, 2012 06:59:00 PM	23.000	°C

8 Day Hyalella azteca Survival and Growth Sediment Toxicity
Lower Passaic River Remedial Investigation. ESI Study 22801. January 2013.

1347	Dec 19, 2012 07:59:00 PM	23.100	°C
1348	Dec 19, 2012 08:59:00 PM	23.300	°C
1349	Dec 19, 2012 09:59:00 PM	23.400	°C
1350	Dec 19, 2012 10:59:00 PM	23.400	°C
1351	Dec 19, 2012 11:59:00 PM	23.300	°C
1352	Dec 20, 2012 12:59:00 AM	23.400	°C
1353	Dec 20, 2012 01:59:00 AM	23.400	°C
1354	Dec 20, 2012 02:59:00 AM	23.400	°C
1355	Dec 20, 2012 03:59:00 AM	23.400	°C
1356	Dec 20, 2012 04:59:00 AM	23.400	°C
1357	Dec 20, 2012 05:59:00 AM	23.400	°C
1358	Dec 20, 2012 06:59:00 AM	23.400	°C
1359	Dec 20, 2012 07:59:00 AM	23.500	°C
1360	Dec 20, 2012 08:59:00 AM	23.500	°C
1361	Dec 20, 2012 09:59:00 AM	23.400	°C
1362	Dec 20, 2012 10:59:00 AM	23.400	°C
1363	Dec 20, 2012 11:59:00 AM	23.500	°C
1364	Dec 20, 2012 12:59:00 PM	23.200	°C
1365	Dec 20, 2012 01:59:00 PM	22.500	°C
1366	Dec 20, 2012 02:59:00 PM	22.600	°C
1367	Dec 20, 2012 03:59:00 PM	22.900	°C
1368	Dec 20, 2012 04:59:00 PM	22.600	°C
1369	Dec 20, 2012 05:59:00 PM	22.900	°C
1370	Dec 20, 2012 06:59:00 PM	23.000	°C
1371	Dec 20, 2012 07:59:00 PM	23.100	°C
1372	Dec 20, 2012 08:59:00 PM	23.100	°C
1373	Dec 20, 2012 09:59:00 PM	23.100	°C
1374	Dec 20, 2012 10:59:00 PM	23.100	°C
1375	Dec 20, 2012 11:59:00 PM	22.900	°C
1376	Dec 21, 2012 12:59:00 AM	22.900	°C
1377	Dec 21, 2012 01:59:00 AM	22.900	°C
1378	Dec 21, 2012 02:59:00 AM	23.100	°C
1379	Dec 21, 2012 03:59:00 AM	23.100	°C
1380	Dec 21, 2012 04:59:00 AM	23.100	°C
1381	Dec 21, 2012 05:59:00 AM	23.100	°C
1382	Dec 21, 2012 06:59:00 AM	23.100	°C
1383	Dec 21, 2012 07:59:00 AM	23.200	°C
1384	Dec 21, 2012 08:59:00 AM	23.200	°C
1385	Dec 21, 2012 09:59:00 AM	23.200	°C
1386	Dec 21, 2012 10:59:00 AM	23.200	°C
1387	Dec 21, 2012 11:59:00 AM	23.100	°C
1388	Dec 21, 2012 12:59:00 PM	22.700	°C
1389	Dec 21, 2012 01:59:00 PM	22.900	°C
1390	Dec 21, 2012 02:59:00 PM	23.200	°C
1391	Dec 21, 2012 03:59:00 PM	23.200	°C
1392	Dec 21, 2012 04:59:00 PM	23.300	°C
1393	Dec 21, 2012 05:59:00 PM	23.300	°C
1394	Dec 21, 2012 06:59:00 PM	23.200	°C
1395	Dec 21, 2012 07:59:00 PM	23.200	°C
1396	Dec 21, 2012 08:59:00 PM	23.200	°C
1397	Dec 21, 2012 09:59:00 PM	23.100	°C
1398	Dec 21, 2012 10:59:00 PM	22.900	°C
1399	Dec 21, 2012 11:59:00 PM	22.800	°C
1400	Dec 22, 2012 12:59:00 AM	22.800	°C
1401	Dec 22, 2012 01:59:00 AM	22.800	°C
1402	Dec 22, 2012 02:59:00 AM	22.900	°C
1403	Dec 22, 2012 03:59:00 AM	22.800	°C
1404	Dec 22, 2012 04:59:00 AM	22.900	°C
1405	Dec 22, 2012 05:59:00 AM	22.800	°C
1406	Dec 22, 2012 06:59:00 AM	22.800	°C
1407	Dec 22, 2012 07:59:00 AM	22.900	°C
1408	Dec 22, 2012 08:59:00 AM	22.900	°C
1409	Dec 22, 2012 09:59:00 AM	22.800	°C
1410	Dec 22, 2012 10:59:00 AM	22.800	°C
1411	Dec 22, 2012 11:59:00 AM	21.900	°C
1412	Dec 22, 2012 12:59:00 PM	21.600	°C
1413	Dec 22, 2012 01:59:00 PM	22.200	°C
1414	Dec 22, 2012 02:59:00 PM	22.400	°C
1415	Dec 22, 2012 03:59:00 PM	22.500	°C
1416	Dec 22, 2012 04:59:00 PM	22.500	°C
1417	Dec 22, 2012 05:59:00 PM	22.600	°C
1418	Dec 22, 2012 06:59:00 PM	22.500	°C
1419	Dec 22, 2012 07:59:00 PM	22.500	°C
1420	Dec 22, 2012 08:59:00 PM	22.400	°C
1421	Dec 22, 2012 09:59:00 PM	22.400	°C
1422	Dec 22, 2012 10:59:00 PM	22.400	°C
1423	Dec 22, 2012 11:59:00 PM	22.100	°C
1424	Lower Passaic River Remedial Investigation. ESI Study 22801. January 2013.	22.100	°C

1425	Dec 23, 2012 01:59:00 AM	21.900	°C
1426	Dec 23, 2012 02:59:00 AM	21.800	°C
1427	Dec 23, 2012 03:59:00 AM	21.700	°C
1428	Dec 23, 2012 04:59:00 AM	21.600	°C
1429	Dec 23, 2012 05:59:00 AM	21.500	°C
1430	Dec 23, 2012 06:59:00 AM	21.400	°C
1431	Dec 23, 2012 07:59:00 AM	21.400	°C
1432	Dec 23, 2012 08:59:00 AM	21.700	°C
1433	Dec 23, 2012 09:59:00 AM	21.900	°C
1434	Dec 23, 2012 10:59:00 AM	22.200	°C
1435	Dec 23, 2012 11:59:00 AM	22.400	°C
1436	Dec 23, 2012 12:59:00 PM	22.600	°C
1437	Dec 23, 2012 01:59:00 PM	22.200	°C
1438	Dec 23, 2012 02:59:00 PM	21.200	°C
1439	Dec 23, 2012 03:59:00 PM	21.800	°C
1440	Dec 23, 2012 04:59:00 PM	22.200	°C
1441	Dec 23, 2012 05:59:00 PM	22.400	°C
1442	Dec 23, 2012 06:59:00 PM	22.500	°C
1443	Dec 23, 2012 07:59:00 PM	22.600	°C
1444	Dec 23, 2012 08:59:00 PM	22.600	°C
1445	Dec 23, 2012 09:59:00 PM	22.600	°C
1446	Dec 23, 2012 10:59:00 PM	22.600	°C
1447	Dec 23, 2012 11:59:00 PM	22.600	°C
1448	Dec 24, 2012 12:59:00 AM	22.400	°C
1449	Dec 24, 2012 01:59:00 AM	22.400	°C
1450	Dec 24, 2012 02:59:00 AM	22.400	°C
1451	Dec 24, 2012 03:59:00 AM	22.400	°C
1452	Dec 24, 2012 04:59:00 AM	22.500	°C
1453	Dec 24, 2012 05:59:00 AM	22.500	°C
1454	Dec 24, 2012 06:59:00 AM	22.500	°C
1455	Dec 24, 2012 07:59:00 AM	22.600	°C
1456	Dec 24, 2012 08:59:00 AM	22.600	°C
1457	Dec 24, 2012 09:59:00 AM	22.600	°C
1458	Dec 24, 2012 10:59:00 AM	21.600	°C
1459	Dec 24, 2012 11:59:00 AM	21.400	°C
1460	Dec 24, 2012 12:59:00 PM	22.100	°C
1461	Dec 24, 2012 01:59:00 PM	22.500	°C
1462	Dec 24, 2012 02:59:00 PM	22.800	°C
1463	Dec 24, 2012 03:59:00 PM	22.900	°C
1464	Dec 24, 2012 04:59:00 PM	22.900	°C
1465	Dec 24, 2012 05:59:00 PM	22.900	°C
1466	Dec 24, 2012 06:59:00 PM	22.900	°C
1467	Dec 24, 2012 07:59:00 PM	22.800	°C
1468	Dec 24, 2012 08:59:00 PM	22.900	°C
1469	Dec 24, 2012 09:59:00 PM	22.900	°C
1470	Dec 24, 2012 10:59:00 PM	22.800	°C
1471	Dec 24, 2012 11:59:00 PM	22.800	°C
1472	Dec 25, 2012 12:59:00 AM	22.800	°C
1473	Dec 25, 2012 01:59:00 AM	22.900	°C
1474	Dec 25, 2012 02:59:00 AM	22.900	°C
1475	Dec 25, 2012 03:59:00 AM	22.900	°C
1476	Dec 25, 2012 04:59:00 AM	22.900	°C
1477	Dec 25, 2012 05:59:00 AM	22.900	°C
1478	Dec 25, 2012 06:59:00 AM	22.900	°C
1479	Dec 25, 2012 07:59:00 AM	22.900	°C
1480	Dec 25, 2012 08:59:00 AM	22.900	°C
1481	Dec 25, 2012 09:59:00 AM	22.900	°C
1482	Dec 25, 2012 10:59:00 AM	22.900	°C
1483	Dec 25, 2012 11:59:00 AM	22.900	°C
1484	Dec 25, 2012 12:59:00 PM	22.900	°C
1485	Dec 25, 2012 01:59:00 PM	22.900	°C
1486	Dec 25, 2012 02:59:00 PM	22.600	°C
1487	Dec 25, 2012 03:59:00 PM	21.900	°C
1488	Dec 25, 2012 04:59:00 PM	22.600	°C
1489	Dec 25, 2012 05:59:00 PM	22.800	°C
1490	Dec 25, 2012 06:59:00 PM	22.900	°C
1491	Dec 25, 2012 07:59:00 PM	22.900	°C
1492	Dec 25, 2012 08:59:00 PM	22.900	°C
1493	Dec 25, 2012 09:59:00 PM	22.900	°C
1494	Dec 25, 2012 10:59:00 PM	22.900	°C
1495	Dec 25, 2012 11:59:00 PM	22.900	°C
1496	Dec 26, 2012 12:59:00 AM	22.900	°C
1497	Dec 26, 2012 01:59:00 AM	22.900	°C
1498	Dec 26, 2012 02:59:00 AM	22.900	°C
1499	Dec 26, 2012 03:59:00 AM	22.900	°C
1500	Dec 26, 2012 04:59:00 AM	22.900	°C
1501	Dec 26, 2012 05:59:00 AM	22.800	°C
1502	Dec 26, 2012 06:59:00 AM	22.800	°C

8 Day Hyalellaazteca Survival and Growth Sediment Toxicity
Lower Passaic River Remedial Investigation, ES Study 22801, January 2013.

1503	Dec 26, 2012 07:59:00 AM	22.900	°C
1504	Dec 26, 2012 08:59:00 AM	22.800	°C
1505	Dec 26, 2012 09:59:00 AM	22.800	°C
1506	Dec 26, 2012 10:59:00 AM	22.600	°C
1507	Dec 26, 2012 11:59:00 AM	21.500	°C
1508	Dec 26, 2012 12:59:00 PM	20.900	°C
1509	Dec 26, 2012 01:59:00 PM	21.100	°C
1510	Dec 26, 2012 02:59:00 PM	21.200	°C
1511	Dec 26, 2012 03:59:00 PM	21.200	°C
1512	Dec 26, 2012 04:59:00 PM	21.200	°C
1513	Dec 26, 2012 05:59:00 PM	21.200	°C
1514	Dec 26, 2012 06:59:00 PM	21.200	°C
1515	Dec 26, 2012 07:59:00 PM	21.200	°C
1516	Dec 26, 2012 08:59:00 PM	21.200	°C
1517	Dec 26, 2012 09:59:00 PM	21.200	°C
1518	Dec 26, 2012 10:59:00 PM	21.200	°C
1519	Dec 26, 2012 11:59:00 PM	21.100	°C
1520	Dec 27, 2012 12:59:00 AM	21.100	°C
1521	Dec 27, 2012 01:59:00 AM	21.100	°C
1522	Dec 27, 2012 02:59:00 AM	21.200	°C
1523	Dec 27, 2012 03:59:00 AM	21.200	°C
1524	Dec 27, 2012 04:59:00 AM	21.200	°C
1525	Dec 27, 2012 05:59:00 AM	21.200	°C
1526	Dec 27, 2012 06:59:00 AM	21.200	°C
1527	Dec 27, 2012 07:59:00 AM	21.400	°C
1528	Dec 27, 2012 08:59:00 AM	21.400	°C
1529	Dec 27, 2012 09:59:00 AM	21.400	°C
1530	Dec 27, 2012 10:59:00 AM	21.400	°C
1531	Dec 27, 2012 11:59:00 AM	21.200	°C
1532	Dec 27, 2012 12:59:00 PM	20.800	°C
1533	Dec 27, 2012 01:59:00 PM	20.800	°C
1534	Dec 27, 2012 02:59:00 PM	21.000	°C
1535	Dec 27, 2012 03:59:00 PM	21.000	°C
1536	Dec 27, 2012 04:59:00 PM	21.000	°C
1537	Dec 27, 2012 05:59:00 PM	21.000	°C
1538	Dec 27, 2012 06:59:00 PM	21.400	°C
1539	Dec 27, 2012 07:59:00 PM	21.800	°C
1540	Dec 27, 2012 08:59:00 PM	21.800	°C
1541	Dec 27, 2012 09:59:00 PM	21.800	°C
1542	Dec 27, 2012 10:59:00 PM	21.800	°C
1543	Dec 27, 2012 11:59:00 PM	21.800	°C
1544	Dec 28, 2012 12:59:00 AM	21.800	°C
1545	Dec 28, 2012 01:59:00 AM	21.800	°C
1546	Dec 28, 2012 02:59:00 AM	21.800	°C
1547	Dec 28, 2012 03:59:00 AM	21.800	°C
1548	Dec 28, 2012 04:59:00 AM	21.700	°C
1549	Dec 28, 2012 05:59:00 AM	21.800	°C
1550	Dec 28, 2012 06:59:00 AM	21.800	°C
1551	Dec 28, 2012 07:59:00 AM	21.800	°C
1552	Dec 28, 2012 08:59:00 AM	21.800	°C
1553	Dec 28, 2012 09:59:00 AM	21.700	°C
1554	Dec 28, 2012 10:59:00 AM	21.600	°C
1555	Dec 28, 2012 11:59:00 AM	20.600	°C
1556	Dec 28, 2012 12:59:00 PM	21.100	°C
1557	Dec 28, 2012 01:59:00 PM	21.600	°C
1558	Dec 28, 2012 02:59:00 PM	21.700	°C
1559	Dec 28, 2012 03:59:00 PM	21.700	°C
1560	Dec 28, 2012 04:59:00 PM	21.800	°C
1561	Dec 28, 2012 05:59:00 PM	21.800	°C
1562	Dec 28, 2012 06:59:00 PM	21.800	°C
1563	Dec 28, 2012 07:59:00 PM	21.800	°C
1564	Dec 28, 2012 08:59:00 PM	21.700	°C
1565	Dec 28, 2012 09:59:00 PM	21.700	°C
1566	Dec 28, 2012 10:59:00 PM	21.800	°C
1567	Dec 28, 2012 11:59:00 PM	21.700	°C
1568	Dec 29, 2012 12:59:00 AM	21.600	°C
1569	Dec 29, 2012 01:59:00 AM	21.600	°C
1570	Dec 29, 2012 02:59:00 AM	21.700	°C
1571	Dec 29, 2012 03:59:00 AM	21.800	°C
1572	Dec 29, 2012 04:59:00 AM	21.800	°C
1573	Dec 29, 2012 05:59:00 AM	21.800	°C
1574	Dec 29, 2012 06:59:00 AM	21.700	°C
1575	Dec 29, 2012 07:59:00 AM	21.800	°C
1576	Dec 29, 2012 08:59:00 AM	21.800	°C
1577	Dec 29, 2012 09:59:00 AM	21.800	°C
1578	Dec 29, 2012 10:59:00 AM	21.800	°C
1579	Dec 29, 2012 11:59:00 AM	21.800	°C
1580	Dec 29, 2012 12:59:00 PM	20.900	°C

8 Day Hyatella azteca Survival and Growth Sediment Toxicity
Lower Passaic River Remedial Investigation, ES Study 22801, January 2013.

1581	Dec 29, 2012 01:59:00 PM	21.300	°C
1582	Dec 29, 2012 02:59:00 PM	21.700	°C
1583	Dec 29, 2012 03:59:00 PM	21.800	°C
1584	Dec 29, 2012 04:59:00 PM	21.800	°C
1585	Dec 29, 2012 05:59:00 PM	21.800	°C
1586	Dec 29, 2012 06:59:00 PM	21.800	°C
1587	Dec 29, 2012 07:59:00 PM	21.800	°C
1588	Dec 29, 2012 08:59:00 PM	21.800	°C
1589	Dec 29, 2012 09:59:00 PM	21.800	°C
1590	Dec 29, 2012 10:59:00 PM	21.700	°C
1591	Dec 29, 2012 11:59:00 PM	21.600	°C
1592	Dec 30, 2012 12:59:00 AM	21.600	°C
1593	Dec 30, 2012 01:59:00 AM	21.500	°C
1594	Dec 30, 2012 02:59:00 AM	21.500	°C
1595	Dec 30, 2012 03:59:00 AM	21.500	°C
1596	Dec 30, 2012 04:59:00 AM	21.600	°C
1597	Dec 30, 2012 05:59:00 AM	21.600	°C
1598	Dec 30, 2012 06:59:00 AM	21.600	°C
1599	Dec 30, 2012 07:59:00 AM	21.700	°C
1600	Dec 30, 2012 08:59:00 AM	21.600	°C
1601	Dec 30, 2012 09:59:00 AM	21.500	°C
1602	Dec 30, 2012 10:59:00 AM	21.400	°C
1603	Dec 30, 2012 11:59:00 AM	21.500	°C
1604	Dec 30, 2012 12:59:00 PM	21.600	°C
1605	Dec 30, 2012 01:59:00 PM	20.500	°C
1606	Dec 30, 2012 02:59:00 PM	21.100	°C
1607	Dec 30, 2012 03:59:00 PM	21.400	°C
1608	Dec 30, 2012 04:59:00 PM	21.400	°C
1609	Dec 30, 2012 05:59:00 PM	21.500	°C
1610	Dec 30, 2012 06:59:00 PM	21.500	°C
1611	Dec 30, 2012 07:59:00 PM	21.600	°C
1612	Dec 30, 2012 08:59:00 PM	21.500	°C
1613	Dec 30, 2012 09:59:00 PM	21.500	°C
1614	Dec 30, 2012 10:59:00 PM	21.500	°C
1615	Dec 30, 2012 11:59:00 PM	21.500	°C
1616	Dec 31, 2012 12:59:00 AM	21.400	°C
1617	Dec 31, 2012 01:59:00 AM	21.400	°C
1618	Dec 31, 2012 02:59:00 AM	21.400	°C
1619	Dec 31, 2012 03:59:00 AM	21.500	°C
1620	Dec 31, 2012 04:59:00 AM	21.600	°C
1621	Dec 31, 2012 05:59:00 AM	21.600	°C
1622	Dec 31, 2012 06:59:00 AM	21.600	°C
1623	Dec 31, 2012 07:59:00 AM	21.600	°C
1624	Dec 31, 2012 08:59:00 AM	21.600	°C
1625	Dec 31, 2012 09:59:00 AM	21.600	°C
1626	Dec 31, 2012 10:59:00 AM	21.600	°C
1627	Dec 31, 2012 11:59:00 AM	21.600	°C
1628	Dec 31, 2012 12:59:00 PM	21.000	°C
1629	Dec 31, 2012 01:59:00 PM	20.800	°C
1630	Dec 31, 2012 02:59:00 PM	21.500	°C
1631	Dec 31, 2012 03:59:00 PM	22.000	°C
1632	Dec 31, 2012 04:59:00 PM	22.200	°C
1633	Dec 31, 2012 05:59:00 PM	22.300	°C
1634	Dec 31, 2012 06:59:00 PM	22.300	°C
1635	Dec 31, 2012 07:59:00 PM	22.400	°C
1636	Dec 31, 2012 08:59:00 PM	22.400	°C
1637	Dec 31, 2012 09:59:00 PM	22.300	°C
1638	Dec 31, 2012 10:59:00 PM	22.400	°C
1639	Dec 31, 2012 11:59:00 PM	22.200	°C
1640	Jan 01, 2013 12:59:00 AM	22.200	°C
1641	Jan 01, 2013 01:59:00 AM	22.400	°C
1642	Jan 01, 2013 02:59:00 AM	22.400	°C
1643	Jan 01, 2013 03:59:00 AM	22.400	°C
1644	Jan 01, 2013 04:59:00 AM	22.400	°C
1645	Jan 01, 2013 05:59:00 AM	22.400	°C
1646	Jan 01, 2013 06:59:00 AM	22.400	°C
1647	Jan 01, 2013 07:59:00 AM	22.400	°C
1648	Jan 01, 2013 08:59:00 AM	22.400	°C
1649	Jan 01, 2013 09:59:00 AM	22.300	°C
1650	Jan 01, 2013 10:59:00 AM	22.200	°C
1651	Jan 01, 2013 11:59:00 AM	22.100	°C
1652	Jan 01, 2013 12:59:00 PM	22.200	°C
1653	Jan 01, 2013 01:59:00 PM	22.300	°C
1654	Jan 01, 2013 02:59:00 PM	22.200	°C
1655	Jan 01, 2013 03:59:00 PM	22.200	°C
1656	Jan 01, 2013 04:59:00 PM	22.200	°C
1657	Jan 01, 2013 05:59:00 PM	22.200	°C
1658	Jan 01, 2013 06:59:00 PM	21.500	°C

28 day *Escherichia coli* Survival and Growth Sediment Toxicity
Lower Passaic River Remedial Investigation, ES Study 22801, January 2013.

1659	Jan 01, 2013 07:59:00 PM	22.000	°C
1660	Jan 01, 2013 08:59:00 PM	22.100	°C
1661	Jan 01, 2013 09:59:00 PM	22.100	°C
1662	Jan 01, 2013 10:59:00 PM	22.100	°C
1663	Jan 01, 2013 11:59:00 PM	22.100	°C
1664	Jan 02, 2013 12:59:00 AM	22.000	°C
1665	Jan 02, 2013 01:59:00 AM	21.900	°C
1666	Jan 02, 2013 02:59:00 AM	22.000	°C
1667	Jan 02, 2013 03:59:00 AM	22.000	°C
1668	Jan 02, 2013 04:59:00 AM	22.100	°C
1669	Jan 02, 2013 05:59:00 AM	22.200	°C
1670	Jan 02, 2013 06:59:00 AM	22.200	°C
1671	Jan 02, 2013 07:59:00 AM	22.100	°C
1672	Jan 02, 2013 08:59:00 AM	22.100	°C
1673	Jan 02, 2013 09:59:00 AM	22.100	°C
1674	Jan 02, 2013 10:59:00 AM	22.200	°C
1675	Jan 02, 2013 11:59:00 AM	21.200	°C
1676	Jan 02, 2013 12:59:00 PM	21.200	°C
1677	Jan 02, 2013 01:59:00 PM	21.800	°C
1678	Jan 02, 2013 02:59:00 PM	22.100	°C
1679	Jan 02, 2013 03:59:00 PM	22.100	°C
1680	Jan 02, 2013 04:59:00 PM	22.100	°C
1681	Jan 02, 2013 05:59:00 PM	22.100	°C
1682	Jan 02, 2013 06:59:00 PM	22.100	°C
1683	Jan 02, 2013 07:59:00 PM	22.100	°C
1684	Jan 02, 2013 08:59:00 PM	22.000	°C
1685	Jan 02, 2013 09:59:00 PM	21.900	°C
1686	Jan 02, 2013 10:59:00 PM	21.900	°C
1687	Jan 02, 2013 11:59:00 PM	21.700	°C
1688	Jan 03, 2013 12:59:00 AM	21.200	°C
1689	Jan 03, 2013 01:59:00 AM	20.800	°C
1690	Jan 03, 2013 02:59:00 AM	20.300	°C
1691	Jan 03, 2013 03:59:00 AM	19.900	°C
1692	Jan 03, 2013 04:59:00 AM	19.600	°C
1693	Jan 03, 2013 05:59:00 AM	19.300	°C
1694	Jan 03, 2013 06:59:00 AM	19.100	°C
1695	Jan 03, 2013 07:59:00 AM	18.900	°C
1696	Jan 03, 2013 08:59:00 AM	19.000	°C
1697	Jan 03, 2013 09:59:00 AM	19.200	°C
1698	Jan 03, 2013 10:59:00 AM	19.500	°C
1699	Jan 03, 2013 11:59:00 AM	19.800	°C
1700	Jan 03, 2013 12:59:00 PM	18.800	°C
1701	Jan 03, 2013 01:59:00 PM	19.300	°C
1702	Jan 03, 2013 02:59:00 PM	20.200	°C
1703	Jan 03, 2013 03:59:00 PM	20.800	°C
1704	Jan 03, 2013 04:59:00 PM	21.200	°C
1705	Jan 03, 2013 05:59:00 PM	21.600	°C
1706	Jan 03, 2013 06:59:00 PM	21.900	°C
1707	Jan 03, 2013 07:59:00 PM	22.000	°C
1708	Jan 03, 2013 08:59:00 PM	22.000	°C
1709	Jan 03, 2013 09:59:00 PM	22.100	°C
1710	Jan 03, 2013 10:59:00 PM	22.100	°C
1711	Jan 03, 2013 11:59:00 PM	22.000	°C
1712	Jan 04, 2013 12:59:00 AM	21.800	°C
1713	Jan 04, 2013 01:59:00 AM	21.800	°C
1714	Jan 04, 2013 02:59:00 AM	21.800	°C
1715	Jan 04, 2013 03:59:00 AM	21.800	°C
1716	Jan 04, 2013 04:59:00 AM	21.800	°C
1717	Jan 04, 2013 05:59:00 AM	21.800	°C
1718	Jan 04, 2013 06:59:00 AM	21.800	°C
1719	Jan 04, 2013 07:59:00 AM	21.900	°C
1720	Jan 04, 2013 08:59:00 AM	22.100	°C
1721	Jan 04, 2013 09:59:00 AM	22.200	°C
1722	Jan 04, 2013 10:59:00 AM	21.800	°C
1723	Jan 04, 2013 11:59:00 AM	20.000	°C



Aquatic Research Organisms

PLC
12/10/12

DATA SHEET

I. Organism History

Species *Hyalella azteca*
Source: Lab reared Hatchery reared _____ Field collected _____
Hatch date 12/1/12 Receipt date _____
Lot number 12 01 12 HA Strain ARCO
Brood origination LPA OH

II. Water Quality

Temperature 24 °C Salinity — ppt D.O. SAT ppm
pH 7.4 su Hardness ≈ 120 ppm Alkalinity ≈ 140 ppm

III. Culture Conditions

Freshwater Saltwater _____ Other _____
Recirculating _____ Flow through _____ Static renewal
DIET: Flake food Phytoplankton _____ Trout chow
Artemia _____ Rotifers _____ YCT _____ Other _____

Prophylactic treatments: _____

Comments: Same batch as American
Aquatics

IV. Shipping Information

Client: EST # of Organisms 2800+
Carrier: Pick-up Date shipped 12/6/12
Biologist: [Signature]

PO BOX 1271 HAMPTON NH 03843-1271 (603) 926-1650 AROFISH@AOL.COM

Test Sediment Preparation Notes

Study: 22801/22802

Client: Windward Environmental, LLC

Project: Lower Passaic River Remedial Investigation

Field ID	Receipt Number	Sample Number	Notes
UPRT18I	22800-001	001	Very sandy. Sticks & a few rocks. NO PORE WATER PRESENT
UPRT18H	22800-002	002	Sandy. High moisture content
UPRT18J	22800-003	003	Same as Sample 2 with some organics present
UPRT18K	22800-004	004	Same as Sample 001
UPRT19J	22800-005	005	Fine organics and silt present. No overlying pore H ₂ O
UPRT19K	22800-006	006	Sand with rocks and sticks. Low % moisture
UPRT19L	22800-007	007	Medium to coarse sand. Very dry.
UPRT19M	22800-008	008	Same as 007. Some rocks
UPRT20A	22800-009	009	Some moisture. Coarse sand with rocks and organics
UPRT20B	22800-010	010	Some moisture. Coarse sand with some organics.
UPRT20C	22800-011	011	Silt and small organics. High % moisture ^{1 bucket} fully consumed
UPRT20D	22800-012	012	Silt and organics. Contains twigs and roots. Moisture. ^{Leptospadix present}
UPRT20E	22800-013	013	Sand and gravel with little organics. No moisture
UPRT20F	22800-014	014	Silt and small organics. High % moisture. ^{Anthrax} present.
UPRT20G	22800-015	015	Median and coarse sand with some rocks. High % moisture
UPRT21A	22800-016	016	Median and coarse sand with little moisture.
UPRT21B	22800-017	017	Silt and small organics with large debris. High % moisture
UPRT21C	22800-018	018	Coarse sand with few organics and ^{some} moisture ^{20% moisture}
UPRT21D	22800-019	019	Coarse sand with few organics and some moisture
UPRT21E	22800-020	020	Same as sample 19
UPRT21F	22800-021	021	Fine sand with ^{some} organics and silt present. ^{Some moisture} present
UPRT21G	22800-022	022	Coarse sand with no large debris. low % moisture
UPRT22A	22800-023	023	Coarse sand and smaller rocks /debris. Low moisture.
UPRT22B	22800-024	024	Sand and gravel with very little organics. Very low % moisture.

Date: 12/06/12

Initial: AM/JTP

Sample Pore Water Analysis
Study: 22801/22802
Client: Windward Environmental, LLC
Project: Lower Passaic River Remedial Investigation

Field ID	Receipt Number	Sample Number	Salinity (ppt)	pH (SU)
UPRT18I	22800-001	001	NA	NA
UPRT18H	22800-002	002	0.3	6.54
UPRT18J	22800-003	003	NA	NA
UPRT18K	22800-004	004	NA	NA
UPRT19J	22800-005	005	0.5	6.46
UPRT19K	22800-006	006	NA	NA
UPRT19L	22800-007	007	NA	NA
UPRT19M	22800-008	008	NA	NA
UPRT20A	22800-009	009	0.5	6.74
UPRT20B	22800-010	010	0.4	6.84
UPRT20C	22800-011	011	0.4	6.83
UPRT20D	22800-012	012	0.4	6.80
UPRT20E	22800-013	013	NA	NA
UPRT20F	22800-014	014	0.5	6.07
UPRT20G	22800-015	015	0.4	7.04
UPRT21A	22800-016	016	NA	NA
UPRT21B	22800-017	017	0.6	6.80
UPRT21C	22800-018	018	0.5	7.19
UPRT21D	22800-019	019	NA	NA
UPRT21E	22800-020	020	NA	NA
UPRT21F	22800-021	021	0.4	6.83
UPRT21G	22800-022	022	NA	NA
UPRT22A	22800-023	023	NA	NA
UPRT22B	22800-024	024	NA	NA
Date: 12/06/12		Salinity Meter ID: YS130C		
Initial: SG/4		pH Meter ID: AB-15		

P:\GENERAL PROJECTS\RPT-active\ERA 22800 Windward Environmental\LabForms\Sample Pore Water Analysis.wpd

"NA" Indicates that pore water was not available for analysis - RAM

* 000 0.2 7.03

STUDY: 22800
CLIENT: Windward Environmental, LLC.
PROJECT: Lower Passaic River Remedial Investigation
TASK: Pore Water Alkalinity Summary
METHOD: EPA 310.2

Sample LAB ID	Field ID	Sample Number	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-000	Lab Control	000	22800-100	Water	110	4	mg/L	12/06/12 1500	12/20/12 1522
22800-002	UPRT18H	002	22800-102	Water	54	4	mg/L	12/06/12 1500	12/20/12 1523
22800-011	UPRT20C	011	22800-111	Water	230	6	mg/L	12/06/12 1500	12/20/12 1539
22800-012	UPRT20D	012	22800-112	Water	150	4	mg/L	12/06/12 1500	12/20/12 1529
22800-014	UPRT20F	014	22800-114	Water	28	2	mg/L	12/06/12 1500	12/20/12 1530
22800-015	UPRT20G	015	22800-115	Water	130	4	mg/L	12/06/12 1500	12/20/12 1532
22800-017	UPRT21B	017	22800-117	Water	460	10	mg/L	12/06/12 1500	12/20/12 1540
22800-018	UPRT21C	018	22800-118	Water	220	10	mg/L	12/06/12 1500	12/20/12 1545
22800-021	UPRT21F	021	22800-121	Water	170	4	mg/L	12/06/12 1500	12/20/12 1546

STUDY: 22800
CLIENT: Windward Environmental, LLC.
PROJECT: Lower Passaic River Remedial Investigation
TASK: Pore Water Hardness Summary
METHOD: Hardness/SW846 3rd Ed. 6020

Sample LAB ID	Field ID	Sample Number	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-000	Lab Control	000	22800-125	Water	140	0.4	mg/L	12/06/12 1500	12/19/12
22800-002	UPRT18H	002	22800-127	Water	350	0.4	mg/L	12/06/12 1500	12/19/12
22800-011	UPRT20C	011	22800-136	Water	360	0.4	mg/L	12/06/12 1500	12/19/12
22800-012	UPRT20D	012	22800-137	Water	240	0.4	mg/L	12/06/12 1500	12/19/12
22800-014	UPRT20F	014	22800-139	Water	780	0.4	mg/L	12/06/12 1500	12/19/12
22800-017	UPRT21B	017	22800-142	Water	290	0.4	mg/L	12/06/12 1500	12/19/12
22800-018	UPRT21C	018	22800-143	Water	300	0.4	mg/L	12/06/12 1500	12/19/12
22800-021	UPRT21F	021	22800-146	Water	220	0.4	mg/L	12/06/12 1500	12/19/12

STUDY: 22800
CLIENT: Windward Environmental, LLC.
PROJECT: Lower Passaic River Remedial Investigation
TASK: Pore Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample LAB ID	Field ID	Sample Number	LAB ID	Ammonia					SAMPLED	ANALYZED
				Total	Unionized	QLIMIT	UNITS			
22800-000	Lab Control	000	22800-150	ND	0.0001	0.1	mg/L as N	12/06/12 1500	01/02/13 1208	
22800-002	UPRT18H	002	22800-152	1.6	0.0022	0.1	mg/L as N	12/06/12 1500	01/02/13 1209	
22800-005	UPRT19J	005	22800-155	3.5	0.0040	0.1	mg/L as N	12/06/12 1500	01/02/13 1210	
22800-009	UPRT20A	009	22800-159	1.5	0.0033	0.1	mg/L as N	12/06/12 1500	01/02/13 1211	
22800-010	UPRT20B	010	22800-160	1	0.0027	0.1	mg/L as N	12/06/12 1500	01/02/13 1214	
22800-011	UPRT20C	011	22800-161	10	0.0267	0.1	mg/L as N	12/06/12 1500	01/02/13 1215	
22800-012	UPRT20D	012	22800-162	5.8	0.0144	0.1	mg/L as N	12/06/12 1500	01/02/13 1216	
22800-014	UPRT20F	014	22800-164	12	0.0056	0.1	mg/L as N	12/06/12 1500	01/02/13 1217	
22800-017	UPRT21B	017	22800-167	38	0.0947	0.2	mg/L as N	12/06/12 1500	01/02/13 1511	
22800-018	UPRT21C	018	22800-168	1.2	0.0073	0.1	mg/L as N	12/06/12 1500	01/02/13 1219	
22800-021	UPRT21F	021	22800-171	4.6	0.0123	0.1	mg/L as N	12/06/12 1500	01/02/13 1219	

STUDY: 22800
CLIENT: Windward Environmental, LLC.
PROJECT: Lower Passaic River Remedial Investigation
TASK: Pore Water Dissolved Organic Carbon Summary
METHOD: SM 5310 C

Sample LAB ID	Field ID	Sample Number	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-000	Lab Control	000	22800-175	Water	26	0.8	mg/L	12/06/12 1500	12/14/12
22800-002	UPRT18H	002	22800-177	Water	8.8	0.8	mg/L	12/06/12 1500	12/14/12
22800-009	UPRT20A	009	22800-184	Water	21	0.8	mg/L	12/06/12 1500	12/14/12
22800-011	UPRT20C	011	22800-186	Water	10	0.8	mg/L	12/06/12 1500	12/14/12
22800-012	UPRT20D	012	22800-187	Water	7.9	0.8	mg/L	12/06/12 1500	12/14/12
22800-014	UPRT20F	014	22800-189	Water	18	0.8	mg/L	12/06/12 1500	12/18/12
22800-017	UPRT21B	017	22800-192	Water	42	2	mg/L	12/06/12 1500	12/18/12
22800-018	UPRT21C	018	22800-193	Water	47	1.2	mg/L	12/06/12 1500	12/14/12
22800-021	UPRT21F	021	22800-196	Water	9.5	0.8	mg/L	12/06/12 1500	12/14/12

STUDY: 22800

CLIENT: Windward Environmental, LLC.

PROJECT: Lower Passaic River Remedial Investigation

TASK: Initial Sample Quality and Chemistry

Field ID	LabID	Pore Water Qualities							Sediment Total Volatile Solids (%)
		Salinity (ppt)	pH (SU)	Alkalinity (mg/L)	Hardness (mg/L)	Total Ammonia (mg/L)	Unionized Ammonia (mg/L)	Dissolved organic carbon (mg/L)	
Lab Control	22800-000	na	na	110	140	ND	na	26	na
UPRT18I	22800-001	na	na	na	na	na	na	na	7.54
UPRT18H	22800-002	0.3	6.54	54	350	1.6	0.002	8.8	3.43
UPRT18J	22800-003	na	na	na	na	na	na	na	1.61
UPRT18K	22800-004	na	na	na	na	na	na	na	3.02
UPRT19J	22800-005	0.5	6.46	na	na	3.5	0.004	na	16.3
UPRT19K	22800-006	na	na	na	na	na	na	na	5.72
UPRT19L	22800-007	na	na	na	na	na	na	na	1.73
UPRT19M	22800-008	na	na	na	na	na	na	na	1.25
UPRT20A	22800-009	0.5	6.74	na	na	1.5	0.003	21	1.86
UPRT20B	22800-010	0.4	6.84	na	na	1	0.003	na	1.90
UPRT20C	22800-011	0.4	6.83	230	360	10	0.027	10	10.6
UPRT20D	22800-012	0.4	6.80	150	240	5.8	0.014	7.9	8.16
UPRT20E	22800-013	na	na	na	na	na	na	na	1.16
UPRT20F	22800-014	0.5	6.07	28	780	12	0.006	18	13.3
UPRT20G	22800-015	0.4	7.04	130	na	na	na	na	1.51
UPRT21A	22800-016	na	na	na	na	na	na	na	1.54
UPRT21B	22800-017	0.6	6.80	460	290	38	0.095	42	16.8
UPRT21C	22800-018	0.5	7.19	220	300	1.2	0.007	47	2.20
UPRT21D	22800-019	na	na	na	na	na	na	na	0.94
UPRT21E	22800-020	na	na	na	na	na	na	na	2.52
UPRT21F	22800-021	0.4	6.83	170	220	4.6	0.012	9.5	4.20
UPRT21G	22800-022	na	na	na	na	na	na	na	2.78
UPRT22A	22800-023	na	na	na	na	na	na	na	2.04
UPRT22B	22800-024	na	na	na	na	na	na	na	4.76

Note: "na" Indicates that the value is not available.

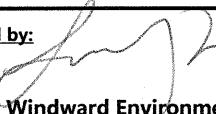
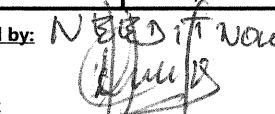
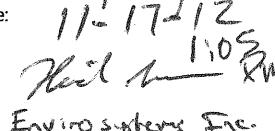
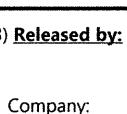
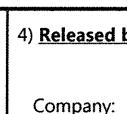
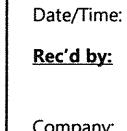
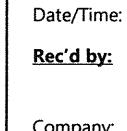
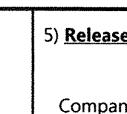
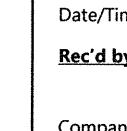
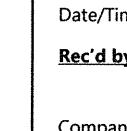
STUDY: 22800
CLIENT: Windward Environmental, LLC.
PROJECT: Lower Passaic River Remedial Investigation
TASK: Total Volatile Solids Summary
METHOD: AASHTO T267-86(2004)

LAB ID	Field ID	Sample Number	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-001	UPRT18I	001	Solid	7.54	0.1	% dry wt	11/12/12 1013	12/28/12 0530
22800-002	UPRT18H	002	Solid	3.43	0.1	% dry wt	11/12/12 1217	12/28/12 0530
22800-003	UPRT18J	003	Solid	1.61	0.1	% dry wt	11/12/12 1321	12/28/12 0530
22800-004	UPRT18K	004	Solid	3.02	0.1	% dry wt	11/12/12 1437	12/28/12 0530
22800-005	UPRT19J	005	Solid	16.3	0.1	% dry wt	11/13/12 0820	12/28/12 0530
22800-006	UPRT19K	006	Solid	5.72	0.1	% dry wt	11/13/12 0946	12/28/12 0530
22800-007	UPRT19L	007	Solid	1.73	0.1	% dry wt	11/13/12 1055	12/28/12 0530
22800-008	UPRT19M	008	Solid	1.25	0.1	% dry wt	11/13/12 1159	12/28/12 0530
22800-009	UPRT20A	009	Solid	1.86	0.1	% dry wt	11/13/12 1330	12/28/12 0530
22800-010	UPRT20B	010	Solid	1.90	0.1	% dry wt	11/13/12 1441	12/28/12 0530
22800-011	UPRT20C	011	Solid	10.6	0.1	% dry wt	11/14/12 0815	12/28/12 0530
22800-012	UPRT20D	012	Solid	8.16	0.1	% dry wt	11/14/12 0914	12/28/12 0530
22800-013	UPRT20E	013	Solid	1.16	0.1	% dry wt	11/14/12 1112	12/28/12 0530
22800-014	UPRT20F	014	Solid	13.3	0.1	% dry wt	11/14/12 1149	12/28/12 0530
22800-015	UPRT20G	015	Solid	1.51	0.1	% dry wt	11/14/12 1252	12/28/12 0530
22800-016	UPRT21A	016	Solid	1.54	0.1	% dry wt	11/14/12 1352	12/28/12 0530
22800-017	UPRT21B	017	Solid	16.8	0.1	% dry wt	11/15/12 0819	12/28/12 0530
22800-018	UPRT21C	018	Solid	2.20	0.1	% dry wt	11/15/12 0917	12/28/12 0530
22800-019	UPRT21D	019	Solid	0.94	0.1	% dry wt	11/15/12 1008	12/28/12 0530
22800-020	UPRT21E	020	Solid	2.52	0.1	% dry wt	11/15/12 1052	12/28/12 0530
22800-021	UPRT21F	021	Solid	4.20	0.1	% dry wt	11/15/12 1129	12/28/12 0530
22800-022	UPRT21G	022	Solid	2.78	0.1	% dry wt	11/15/12 1225	12/28/12 0530
22800-023	UPRT22A	023	Solid	2.04	0.1	% dry wt	11/16/12 0806	12/28/12 0530
22800-024	UPRT22B	024	Solid	4.76	0.1	% dry wt	11/16/12 0909	12/28/12 0530

CHAIN-OF-CUSTODY/TEST REQUEST FORM

Project/Client Name: **Passaic RI/FS Background and Ref Sediment**
 Project Number: **Task 39.1**
 Contact Name: **Karen Tobiason**
 Sampled By: **Thai Do**

Ship to: **EnviroSystems** # UPR-ES111712-1
 Attn: **Ken Simons** Shipping Date: **11.17.12**
 Shipper: **WDS Courier** Airbill Number: **N/A**
 Form filled out by: **T. Do** Turnaround requested: **Standard**

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Toxicity Testing	Test(s) Requested (check test(s) required)					Comments / Instructions [Jar tag number(s)]
11.12.12	1013	UPRT18I	2	Sed	X						
11.12.12	1217	UPRT18H	2	Sed	X						
11.12.12	1321	UPRT18J	2	Sed	X						
11.12.12	1437	UPRT18K	2	Sed	X						
11.13.12	0820	UPRT19J	2	Sed	X						
11.13.12	0946	UPRT19K	2	Sed	X						
11.13.12	1055	UPRT19L	2	Sed	X						
11.13.12	1159	UPRT19M	2	Sed	X						
11.13.12	1330	UPRT20A	2	Sed	X						
Total Number of Containers			18/48	Purchase Order / Statement of Work #2012-0042							
1) Released by:	2) Released by:	3) Released by:	4) Released by:	5) Released by:							
 Company: Windward Environmental Date/Time: 11.17.12/ 10:30 AM <u>Rec'd by:</u> 	 Company: Need it Now Courier Date/Time: 11.17.12/ 8:30 AM <u>Rec'd by:</u> 	 Company: EnviroSystems Inc. Date/Time: 11/17/12 1305 <u>Rec'd by:</u> 	 Company: EnviroSystems Inc. Date/Time:  <u>Rec'd by:</u> 	 Company: EnviroSystems Inc. Date/Time:  <u>Rec'd by:</u> 							

To be completed by Laboratory upon sample receipt:

Date of receipt: 11/17/12	Laboratory W.O. #:
Condition upon receipt: Acceptable	Time of receipt: 1305
Cooler temperature: 40C	Received by: Kirk Cram

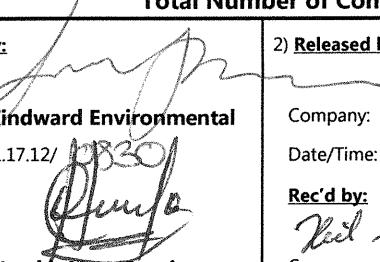
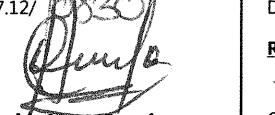
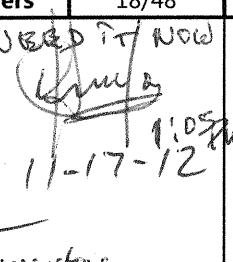
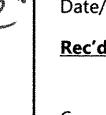


200 West Mercer Street
 Suite 401
 Seattle, WA 98119
 Tel: (206) 378-1364
 Fax: (206) 217-9343

CHAIN-OF-CUSTODY/TEST REQUEST FORM

Project/Client Name: **Passaic RI/FS Background and Ref Sediment**
 Project Number: **Task 39.1**
 Contact Name: **Karen Tobiason**
 Sampled By: **Thai Do**

Ship to: **EnviroSystems** # UPR-ES111712-2
 Attn: **Ken Simons** Shipping Date: **11.17.12**
 Shipper: **WDS Courier** Airbill Number: **N/A**
 Form filled out by: **T. Do** Turnaround requested: **Standard**

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Toxicity Testing	Test(s) Requested (check test(s) required)					Comments / Instructions [Jar tag number(s)]
11.13.12	1441	UPRT20B	2	Sed	X						
11.14.12	0815	UPRT20C	2	Sed	X						
11.14.12	0914	UPRT20D	2	Sed	X						
11.14.12	1112	UPRT20E	2	Sed	X						
11.14.12	1149	UPRT20F	2	Sed	X						
11.14.12	1252	UPRT20G	2	Sed	X						
11.14.12	1352	UPRT21A	2	Sed	X						
11.15.12	0819	UPRT21B	2	Sed	X						
11.15.12	0917	UPRT21C	2	Sed	X						
Total Number of Containers			18/48	Purchase Order / Statement of Work #2012-0042							
1) Released by:	2) Released by:	3) Released by:	4) Released by:	5) Released by:							
 Company: Windward Environmental Date/Time: 11.17.12/ 0830 <u>Rec'd by:</u>  Company: Need it Now Courier Date/Time: 11.17.12/ 0830	 Company: EnviroSystems Date/Time: 11.17.12/ 1305 <u>Rec'd by:</u>  Company: EnviroSystems Date/Time: 11.17.12/ 1305										

To be completed by Laboratory upon sample receipt:

Date of receipt: 11/17/12	Laboratory W.O. #:
Condition upon receipt: Acceptable	Time of receipt: 1305
Cooler temperature: 40C	Received by: Kirk Cram



200 West Mercer Street
 Suite 401
 Seattle, WA 98119
 Tel: (206) 378-1364
 Fax: (206) 217-9343

CHAIN-OF-CUSTODY/TEST REQUEST FORM

Project/Client Name:	Passaic RI/FS Background and Ref Sediment	Ship to:	EnviroSystems	# UPR-ES111712-3
Project Number:	Task 39.1	Attn:	Ken Simons	Shipping Date: 11.17.12
Contact Name:	Karen Tobiason	Shipper:	WDS Courier	Airbill Number: N/A
Sampled By:	Thai Do	Form filled out by:	T. Do	Turnaround requested: Standard

The logo for WindWard environmental LLC. The word "Wind" is written in a large, stylized, lowercase font where the "i" has a small vertical bar extending upwards. A thick, dark curved line starts from the top right, descends to the bottom left, and ends at the top of the "d". To the right of this line, the word "Ward" is written in a bold, sans-serif font. Below "Ward", the words "environmental" and "LLC" are stacked vertically in a smaller, bold, sans-serif font.

200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: (206) 378-1364
Fax: (206) 217-9343

28 Day *Hyalella azteca* Survival and Growth Sediment Toxicity Lower Passaic River Remedial Investigation, ESI Study 22801, January 2013.

To be completed by Laboratory upon sample receipt:

Date of receipt::	9/17/12	Laboratory W.O. #:	
Condition upon receipt:	Acceptable	Time of receipt:	1305
Cooler temperature:	4°C	Received by:	Kirk Cramm

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 1 of 2

STUDY NO: 22800
SDG No:
Project: Lower Passaic River Remedial Investigation
Delivered via:
Date and Time Received: 11/17/12 1305 Date and Time Logged into Lab: 11/17/12 1305
Received By: KC Logged into Lab by: KC RAM
Air bill / Way bill: No Air bill included in folder if received? NA
Cooler on ice/packs: Yes Custody Seals present? NA
Cooler Blank Temp (C) at arrival: 4C Custody Seals intact? NA
Number of COC Pages: 3
COC Serial Number(s):
COC Complete: Yes Does the info on the COC match the samples? Yes
Sampled Date: Yes Were samples received within holding time? Yes
Field ID complete: Yes Were all samples properly labeled? Yes
Sampled Time: Yes Were proper sample containers used? Yes
Analysis request: Yes Were samples received intact? (none broken or leaking) Yes
COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes
Were all samples received? Yes Were VOC vials free of headspace? NA
Client notification/authorization: Not required

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd	Verified
					Pres'n	Pres'n
UPRT18I	22800-001	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT18H	22800-002	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT18J	22800-003	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT18K	22800-004	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT19J	22800-005	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT19K	22800-006	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT19L	22800-007	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT19M	22800-008	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT20A	22800-009	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT20B	22800-010	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT20C	22800-011	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT20D	22800-012	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT20E	22800-013	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT20F	22800-014	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT20G	22800-015	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT21A	22800-016	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT21B	22800-017	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT21C	22800-018	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT21D	22800-019	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT21E	22800-020	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT21F	22800-021	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT21G	22800-022	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT22A	22800-023	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			

Notes and qualifications:

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 2 of 2

STUDY NO: 22800
 SDG No:
 Project: Lower Passaic River Remedial Investigation
 Delivered via:
 Date and Time Received: 11/17/12 1305 Date and Time Logged into Lab: 11/17/12 1305
 Received By: KC Logged into Lab by: KC RAM
 Air bill / Way bill: No Air bill included in folder if received? NA
 Cooler on ice/packs: Yes Custody Seals present? NA
 Cooler Blank Temp (C) at arrival: 4C Custody Seals intact? NA
 Number of COC Pages: 3
 COC Serial Number(s):
 COC Complete:
 Sampled Date: Yes Does the info on the COC match the samples? Yes
 Field ID complete: Yes Were samples received within holding time? Yes
 Sampled Time: Yes Were all samples properly labeled? Yes
 Analysis request: Yes Were proper sample containers used? Yes
 COC Signed and dated: Yes Were samples received intact? (none broken or leaking) Yes
 Were all samples received? Yes Were sample volumes sufficient for requested analysis? Yes
 Were VOC vials free of headspace? NA
 Client notification/authorization: Not required

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd	Verified
				Pres'n	Pres'n	
UPRT22B	22800-024	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			

Notes and qualifications: 22800-024 S Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metals Hard, Salinity, pH;

**TOXICOLOGICAL EVALUATION
OF SEDIMENT SAMPLES:**

**in support of the Ecological Risk Assessment for
Lower Passaic River Remedial Investigation
Purchase Order Number 2012-0042**

**10 Day *Chironomus dilutus*
Survival and Growth Sediment Toxicity Test**

Prepared For:

Windward Environmental LLC
200 West Mercer Street, Suite 401
Seattle, Washington 98119-3958

Prepared By:

EnviroSystems, Incorporated
1 Lafayette Road
Hampton, New Hampshire 03842

January 2013
Reference Number 22802

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**TOXICOLOGICAL EVALUATION
OF SEDIMENT SAMPLES:
in support of the Ecological Risk Assessment for
Lower Passaic River Remedial Investigation
Purchase Order Number 2012-0042**

10 Day *Chironomus dilutus*
Survival and Growth Sediment Toxicity Test

1.0 INTRODUCTION

This report presents the results of acute exposure toxicity tests completed on sediment samples collected for the Lower Passaic River Remedial Investigation. Testing was based on programs and protocols developed by the ASTM (2012) and US EPA (2000). The toxicity of the samples was assessed by conducting short term survival and growth tests using the freshwater midge, *Chironomus dilutus*. Toxicity tests and supporting analyses were performed at EnviroSystems, Incorporated (ESI), Hampton, New Hampshire.

Toxicity tests expose groups of organisms to environmental samples, a laboratory control and field reference sites for a specified period to assess potential impacts on a variety of endpoints, such as survival, growth or reproduction. Analysis of variance techniques are used to determine the relative toxicity of the samples as compared to the laboratory control and/or field reference sites. Endpoints for this study included survival and growth (measured as ash free dry weight and ash free dry biomass).

2.0 MATERIALS AND METHODS

2.1 General Methods, Biological Evaluations

Toxicological and analytical protocols used in this program follow procedures outlined in *Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Freshwater Invertebrates* (ASTM Method E 1706-05, 2012), *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates* (US EPA 2000) and *Standard Methods for the Examination of Water and Wastewater*, 22nd Edition (APHA 2012). These protocols provide standard approaches for physical and chemical analysis and for the evaluation of toxicological effects of sediments on aquatic invertebrates.

2.2 Test Species

The acute exposure assay was completed using *C. dilutus* obtained from Aquatic BioSystems, Inc., Fort Collins, Colorado. Midge larvae were between 8 and 10 days old and more than 50% were at the third instar stage.

2.3 Test Samples and Laboratory Control Sediment

Sediment samples for toxicological analysis were provided by Windward Environmental LLC, Seattle, Washington. Samples were received under chain of custody in Teflon® lined HDPE buckets. Upon arrival at the laboratory, all samples received an internal sample control number and were logged into the project sample control system. Samples were placed in a secure refrigerator and stored at a temperature of 2-4 °C. After sample receipt, sediment pore water was collected and analyzed for salinity, pH, alkalinity, hardness, total ammonia, unionized ammonia and dissolved organic carbon. This data is summarized in the Data Appendix. Once sample containers were opened, the headspace in containers with remaining sample was purged using nitrogen gas to maintain sample integrity prior to return to storage. Sample identification, collection and receipt information is summarized in Table 1.

The control substrate was an artificial sediment prepared according to guidance presented in the EPA/ASTM method. Organic detritus from Chironomid cultures and disintegrated unbleached brown paper towel pulp were used to provide organic content (EPA 2000, ASTM 2012). Overlying water for the sediment toxicity tests was natural surface water, collected from the upper portion of the Taylor River watershed in Hampton Falls, New Hampshire. Use of natural surface water is recommended by the protocol (EPA 2000, ASTM 2012).

2.4 *Chironomus dilutus* Survival and Growth Toxicity Tests

A representative aliquot of sediment was taken from the sample container and then placed into the test chambers. Overlying water was added immediately and then the chambers were allowed to stabilize. The chambers received two volume additions daily until organisms were added. An aliquot of sediment was also submitted for total volatile solids analysis to estimate the organic content of each sample.

Test vessels were 400 mL glass beakers containing 100 mL of sediment and approximately 225 mL of overlying water. Test vessels were drilled at a consistent height above their bases and the hole covered with Nytex® screen. The screened hole facilitates water exchange while retaining test organisms. Vessels were maintained in a water bath during the test. Depth of the water in the bath was set below the drain hole in the test vessel to eliminate flow of water from the bath into the test vessel. Test chambers were randomly placed in the water bath after addition of test sediments. Placement locations were generated by the CETIS® software program. The block randomized position assignments are found on the Test Data Worksheet included in the data appendix. The water bath was maintained in a limited access, temperature controlled room. Temperatures in the room and water bath were independently set at a temperature of 23°C. Temperature was recorded on an hourly frequency using a temperature logger placed in a surrogate vessel. The photoperiod in the test chamber was set at 16:8 hour light:dark. Lighting was supplied by cool white fluorescent bulbs.

On day 0, larvae were randomly selected from the pool of organisms and added to test vessels. Each treatment group included 8 replicates with 10 organisms per replicate and a surrogate test chamber that was used to obtain water qualities during the assay without disturbing the test animals. The surrogate chamber was treated the same as actual test chambers with the addition of animals and food, but was not used to determine endpoint data.

Prior to the daily overlying water renewal, dissolved oxygen, pH, specific conductance and temperature were measured in the surrogate chamber for each treatment. Overlying water in each replicate was then renewed. The volume of water added to each test chamber was approximately two volumes. Water exchanges were facilitated by use of a distribution system designed to provide equal, regulated flow to each chamber. The system was activated manually by the addition of water during the assay. After overlying water renewal each replicate was fed 1.0 mL of 6 g/L Tetramin® flake fish food suspension. Alkalinity, ammonia, and hardness of the overlying water were measured on days 0 and 10. Water quality records are available in Appendix A.

After 10 days exposure, all replicates of each test treatment were terminated to collect data for survival and growth. Each test chamber was gently swirled to loosen the sediments and the test material was dumped on to an appropriately sized mesh screen. The sediments were washed through the sieve using freshwater and material left on the screen was sorted to recover the organisms. This process was continued until the entire sample was evaluated. Surviving larvae were placed on tared weighing pans; partially and fully emerged organisms were recorded in survival counts but not included in weight measurements. Pans were dried overnight at 104°C to obtain dry weight to the nearest 0.01 mg. The organisms were then fired in a muffle furnace for two hours at 550°C to obtain the ash free dry weight to the nearest 0.01 mg. The mean dry weight of surviving organisms was determined to assess growth.

2.5 Statistical Analysis

Survival and growth were analyzed using CETIS® software to determine significant differences between test sediments and the laboratory control sample. Data sets were evaluated to determine normality of distribution and homogeneity of sample variance. Data sets were subsequently evaluated using the appropriate parametric or non-parametric Analysis of Variance (ANOVA) statistics. Selection of specific statistical methods were based on EPA Decision Tree guidelines. Data sets were also analyzed for the presence of outliers using the Grubbs' Outlier Test. In cases where outliers were found, statistical analysis was conducted both with and without the questionable data point and both sets of results are reported. As appropriate, data sets were transformed prior to analysis. Statistical comparisons were made for the following endpoints; day 10 survival, dry weight and dry biomass. Dry weight was calculated by taking the mean dry weight obtained for a replicate and dividing it by the number of surviving organisms. Dry biomass was

calculated by taking the mean dry weight obtained for a replicate and dividing it by the number of organisms exposed at the start of the assay. A second dry biomass endpoint was also calculated by taking the mean dry weight obtained for a replicate and dividing it by the number of organisms exposed at the start of the assay minus any larvae that pupated or emerged during the assay. Pair-wise comparisons were made using the appropriate statistical evaluation. Statistical difference was evaluated at $\alpha=0.05$.

2.6 Quality Control

As part of the laboratory quality control program, reference toxicant evaluations are completed on a regular basis for each test species. These results provide relative health and response data while allowing for comparison with historic data sets. Results are summarized in Table 2.

3.0 RESULTS AND DISCUSSION

3.1 Laboratory Control Performance

At the end of the 10 day exposure period, mean survival in laboratory control sediment was 97.50% with a coefficient of variation (CV) of 4.75%. Larvae recovered from laboratory control sediment had a mean dry weight of 1.876 mg/larvae, with a CV of 16.70%. The dry weight of a representative group of larvae at the start of the assay was 0.401 mg/larvae. The minimum acceptable criteria for the laboratory control treatment is $\geq 70\%$ survival and a mean ash free dry weight (AFDW) of ≥ 0.48 mg/larvae. Table 3 provides a summary of assay acceptability criteria and laboratory control achievement.

3.2 Protocol Deviations

Review of data generated during the 28-day exposure period documented the following protocol deviations.

Temperature data collected during the daily water quality observations documented a mean value of 22.29°C with a range of 19.27 to 24.38°C. Confirmation temperature data collected in a surrogate replicate documented a mean temperature of 22.6°C with a range of 19.2 to 24.5°C. Test acceptability criteria requires a mean temperature of $23\pm 1^\circ\text{C}$, with maximum temporary fluctuations of $23\pm 3^\circ\text{C}$. The temperatures fell below the bounds set by the protocol for a total of 44 hours occurring between Days 1-3 (12/08/12-12/10/12) of the assay. According to the ASTM, *Chironomus dilutus* have been reported in water temperatures ranging from 0 to 35°C. Additionally, as the temperature deviation was related to a low temperature the most probable effect would have been a slowing and subsequent reduction in overall growth of the larvae. As larval dry weight data for the laboratory control and all treatments exceeded protocol minimums the reduced temperatures did not appear to impact overall growth. Since the assay temperatures were well within the natural range for the species and growth exceeded protocol minimum limits, this deviation should not have had a negative impact on the outcome of the assay.

The following deviation from ESI's standard operating procedure was recorded. There were 4 replicates that had 11 instead of 10 animals added to test vessels at the assay start. These replicates were: 22800-000 replicate 4; 22800-012 replicate 2; 22800-021 replicate 7; and 22800-023 replicate 3. These replicates were found to contain 11 animals at the end of the assay and were treated as if 11 animals were added to the test chamber at the start of the assay. This is a reasonable assumption for the following reasons. Technicians are checked for their ability to count live organisms and the staff on hand have documented a high degree of counting accuracy based on checks post count and prior to adding organisms to the test chambers. Even under these circumstances, counting errors can occur and in this case the calculated error rate is 2%. However these impacts should be mitigated by the test design. Testing incorporated 8 replicates for each sample, thereby reducing the impact of a single replicate on the overall assessment. Chironomids present some unique challenges in handling which increases the potential for count errors. The larvae will sometimes entwine themselves with other individuals and at times can appear as one individual when in fact there are two. Such an instance could result in animals being counted as one instead of two. Also to be considered is that it is possible that there could have been some indigenous organisms present in the sediment. Larvae recovered from the sediment are not keyed for species identification. The presence of related species of midge larvae could have contributed to the final organism count in project samples.

After a review of all the data associated with the assay, it is the opinion of ESI's study director that the deviations did not adversely affect the outcome of the assay.

While not a protocol deviation, a laboratory accident occurred during collection of the final ash free dry weight data which resulted in the loss of 15 weigh pans. The pans were spilled and it was not possible to reassign dried larvae to their original weigh pans. As pans are weighed in numerical order associated with the original randomization scheme, the lost pans, in all but one case, represented a single replicate from each effected treatment. In one instance 2 replicates were lost from a treatment. The loss of a single replicate resulted in a minimal reduction in the overall statistical power of the final analysis especially in light of the fact that the individual endpoint statistical value was substantially different from the critical value in all cases. It is noted that for site UPRT19J, ESI Code 22800-005, the single lost replicate represented the only replicate with 3 surviving organisms. This loss precluded computation of any growth statistic for the site. This was considered to have had little impact on the outcome of the overall assay as mean survival in the treatment as 3.75% documenting a very high level of acute toxicity for the sample. The impact of the lost replicates on the overall outcome of the statistical analysis was also further investigated by replacement of weight data for the missing replicate with a value of 0.000 mg. Re-analysis of the data set documented that, with a single exception, there was no change in any of the statistical endpoints. The data set was further evaluated by replacing the weight data for the missing replicate with a value equal to the overall mean dry weight from all replicates. In this case results of the statistical analysis documented no change from the data set with the missing replicate.

3.3 Summary

This program utilized protocols developed by the US EPA and ASTM to assess potential toxicological impacts on aquatic invertebrates. Table 4 provides a summary of demonstrated effects, based on comparisons to the laboratory control. Tables 5 through 10 provide summaries of assay endpoints and detailed statistical results for each sample location. Table 11 summarizes water qualities measured during the test. Laboratory bench sheets, water quality data, detailed summaries of survival, dry weights and associated statistical support data are included in Appendix A.

4.0 REFERENCES

- APHA. 2012. *Standard Methods for the Examination of Water and Wastewater*, 22nd Edition. Washington D.C.
- ASTM. 2012. Annual Book of ASTM Standards. Volume 11.06. *Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Freshwater Invertebrates*. E 1706-05. ASTM, Philadelphia.
- US EPA. 2000. *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates*. Second Edition. EPA/600-R-99/064. Method 100.5.

Table 1. Summary of Sample Collection and Receipt Information. *C. dilutus* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22802. January 2013.

Field ID	ESI Code	Sample Number	Sample Collected Date	Time	Sample Received Date	Time
UPRT18I	22800-001	001	11/12/12	1013	11/17/12	1305
UPRT18H	22800-002	002	11/12/12	1217	11/17/12	1305
UPRT18J	22800-003	003	11/12/12	1321	11/17/12	1305
UPRT18K	22800-004	004	11/12/12	1437	11/17/12	1305
UPRT19J	22800-005	005	11/13/12	0820	11/17/12	1305
UPRT19K	22800-006	006	11/13/12	0946	11/17/12	1305
UPRT19L	22800-007	007	11/13/12	1055	11/17/12	1305
UPRT19M	22800-008	008	11/13/12	1159	11/17/12	1305
UPRT20A	22800-009	009	11/13/12	1330	11/17/12	1305
UPRT20B	22800-010	010	11/13/12	1441	11/17/12	1305
UPRT20C	22800-011	011	11/14/12	0815	11/17/12	1305
UPRT20D	22800-012	012	11/14/12	0914	11/17/12	1305
UPRT20E	22800-013	013	11/14/12	1112	11/17/12	1305
UPRT20F	22800-014	014	11/14/12	1149	11/17/12	1305
UPRT20G	22800-015	015	11/14/12	1252	11/17/12	1305
UPRT21A	22800-016	016	11/14/12	1352	11/17/12	1305
UPRT21B	22800-017	017	11/15/12	0819	11/17/12	1305
UPRT21C	22800-018	018	11/15/12	0917	11/17/12	1305
UPRT21D	22800-019	019	11/15/12	1008	11/17/12	1305
UPRT21E	22800-020	020	11/15/12	1052	11/17/12	1305
UPRT21F	22800-021	021	11/15/12	1129	11/17/12	1305
UPRT21G	22800-022	022	11/15/12	1225	11/17/12	1305
UPRT22A	22800-023	023	11/16/12	0806	11/17/12	1305
UPRT22B	22800-024	024	11/16/12	0909	11/17/12	1305

Table 2. Reference Toxicant Evaluation. *C. dilutus* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22802. January 2013.

Date	Endpoint	Value	Historic Mean/Central Tendency	Acceptable Range	Reference Toxicant
<i>Chironomus dilutus</i>					
12/13/12	Survival	LC-50	4.97	3.25	0.0 - 7.47 Cadmium (mg/L)

Table 3. Summary of Acceptable Endpoints and Measurements. *C. dilutus* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22802. January 2013.

Endpoint / Measurement Protocol Criteria

Survival	lab mean \geq 70%	Mean Survival % Protocol Met	97.50% Yes
Mean Ash Free Dry Wt.	lab > 0.48 mg/larvae Protocol Met	(mg) Protocol Met	1.876 Yes
Temperature	mean: $23^{\circ}\pm 1^{\circ}\text{C}$ minimum: 20°C maximum: 26°C	daily / hourly daily / hourly daily / hourly Protocol Met	22.29 / 22.6 19.27 / 19.2 24.38 / 24.5 No* / No*

Note: * For a discussion of the temperature deviation please see section 3.2 Protocol Deviations.

Table 4. Summary of Statistically Significant Endpoints. *C. dilutus* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22802. January 2013.

Finding of Significant Difference(s) between Project Sites and Laboratory Control

Field ID	ESI Code	Sample Number	survival	ash free dry weight	ash free dry biomass	larvae ash free dry biomass
UPRT18I	22800-001	001	Yes			Yes
UPRT18H	22800-002	002				Yes
UPRT18J	22800-003	003		Yes		Yes
UPRT18K	22800-004	004	Yes	Yes		Yes
UPRT19J	22800-005	005	Yes	-	-	-
UPRT19K	22800-006	006	Yes			Yes
UPRT19L	22800-007	007	Yes			Yes
UPRT19M	22800-008	008	Yes			Yes
UPRT20A	22800-009	009	Yes			Yes
UPRT20B	22800-010	010	Yes			
UPRT20C	22800-011	011	Yes			
UPRT20D	22800-012	012	Yes	Yes		Yes
UPRT20E	22800-013	013	Yes			Yes
UPRT20F	22800-014	014	Yes	Yes	Yes	Yes
UPRT20G	22800-015	015	Yes			
UPRT21A	22800-016	016	Yes			Yes
UPRT21B	22800-017	017	Yes			
UPRT21C	22800-018	018	Yes			Yes
UPRT21D	22800-019	019	Yes			Yes
UPRT21E	22800-020	020	Yes	Yes		Yes
UPRT21F	22800-021	021	Yes			
UPRT21G	22800-022	022	Yes			Yes
UPRT22A	22800-023	023	Yes			Yes
UPRT22B	22800-024	024	Yes			Yes

Note: “-“ Indicates that the sample could not be evaluated for the selected endpoint.

Table 5. Survival Summary and Statistical Analysis. *C. dilutus* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22802. January 2013.

Survival Summary								
Field ID	ESI Code	Sample Number	Reps	Mean	Minimum	Maximum	CV	Significant
Lab Control	22800-000	000	8	97.50%	90%	100%	4.75%	-
UPRT18I	22800-001	001	8	71.25%	30%	100%	33.08%	Yes
UPRT18H	22800-002	002	8	93.75%	90%	100%	5.52%	No
UPRT18J	22800-003	003	8	88.75%	70%	100%	15.28%	No
UPRT18K	22800-004	004	8	86.25%	80%	100%	8.63%	Yes
UPRT19J	22800-005	005	8	3.75%	0%	30%	282.80%	Yes / Yes
UPRT19K	22800-006	006	8	73.75%	20%	100%	32.36%	Yes / Yes
UPRT19L	22800-007	007	8	77.50%	60%	100%	16.54%	Yes
UPRT19M	22800-008	008	8	80.00%	50%	100%	18.90%	Yes
UPRT20A	22800-009	009	8	78.75%	50%	100%	24.88%	Yes
UPRT20B	22800-010	010	8	80.00%	50%	100%	20.04%	Yes
UPRT20C	22800-011	011	8	90.00%	80%	100%	5.94%	Yes
UPRT20D	22800-012	012	8	78.75%	40%	100%	29.15%	Yes
UPRT20E	22800-013	013	8	85.00%	50%	100%	18.87%	Yes / Yes
UPRT20F	22800-014	014	8	53.75%	20%	70%	31.35%	Yes / Yes
UPRT20G	22800-015	015	8	85.00%	60%	100%	14.06%	Yes
UPRT21A	22800-016	016	8	88.75%	80%	100%	9.40%	Yes
UPRT21B	22800-017	017	8	78.75%	60%	90%	12.58%	Yes
UPRT21C	22800-018	018	8	72.50%	60%	90%	12.23%	Yes
UPRT21D	22800-019	019	8	71.25%	40%	90%	24.24%	Yes
UPRT21E	22800-020	020	8	83.75%	60%	100%	16.81%	Yes
UPRT21F	22800-021	021	8	87.50%	80%	100%	10.13%	Yes
UPRT21G	22800-022	022	8	82.50%	30%	100%	27.30%	Yes / Yes
UPRT22A	22800-023	023	8	70.00%	40%	100%	30.54%	Yes
UPRT22B	22800-024	024	8	81.25%	60%	100%	13.86%	Yes

Note: “Yes / Yes” Indicates that an outlier was detected and the result of the statistical analysis was not changed when the outlier was excluded.

Table 6. Ash Free Dry Weight Summary and Statistical Analysis. *C. dilutus* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22802. January 2013.

Ash Free Dry Weight Summary								
Field ID	ESI Code	Sample Number	Reps	Mean	Minimum	Maximum	CV	Significant
Lab Control	22800-000	000	8	1.876	1.557	2.470	16.70%	-
UPRT18I	22800-001	001	7	1.711	1.319	2.187	19.22%	No
UPRT18H	22800-002	002	6	1.550	1.000	2.007	25.32%	No
UPRT18J	22800-003	003	8	1.545	1.276	1.948	15.16%	Yes
UPRT18K	22800-004	004	7	1.466	1.346	1.569	5.43%	Yes / Yes
UPRT19J	22800-005	005	-	-	-	-	-	-
UPRT19K	22800-006	006	8	1.693	1.431	2.015	10.16%	No
UPRT19L	22800-007	007	7	1.645	1.317	2.122	15.79%	No
UPRT19M	22800-008	008	7	1.691	1.313	2.370	21.08%	No
UPRT20A	22800-009	009	8	1.912	1.504	3.010	25.43%	No / No
UPRT20B	22800-010	010	8	1.951	1.180	2.752	24.05%	No
UPRT20C	22800-011	011	6	1.767	1.397	2.240	16.19%	No
UPRT20D	22800-012	012	8	1.575	1.253	2.563	27.13%	Yes / Yes
UPRT20E	22800-013	013	8	1.636	1.288	1.967	13.80%	No
UPRT20F	22800-014	014	7	1.207	0.900	2.080	35.06%	Yes
UPRT20G	22800-015	015	7	1.760	1.040	2.084	20.27%	No
UPRT21A	22800-016	016	8	1.697	1.231	2.383	27.85%	No
UPRT21B	22800-017	017	7	2.235	1.394	3.100	25.79%	No
UPRT21C	22800-018	018	7	1.957	1.380	2.400	19.80%	No
UPRT21D	22800-019	019	7	2.067	1.629	2.592	15.93%	No
UPRT21E	22800-020	020	8	1.637	1.307	1.834	10.01%	Yes
UPRT21F	22800-021	021	8	2.232	1.895	3.023	16.33%	No
UPRT21G	22800-022	022	7	1.712	1.113	2.373	23.57%	No
UPRT22A	22800-023	023	8	1.967	1.373	2.873	28.45%	No
UPRT22B	22800-024	024	8	1.762	1.259	2.025	13.47%	No

Note: “No / No” Indicates that an outlier was detected and the result of the statistical analysis was not changed when the outlier was excluded.

“Yes / Yes” Indicates that an outlier was detected and the result of the statistical analysis was not changed when the outlier was excluded.

During the total weight data collection there were 15 pans that were inadvertently tipped which resulted in loss of dried material. As a consequence these replicates could not be analyzed for the growth endpoints. (These replicates were: 22800-001 replicate 3; 22800-002 replicates 1 and 3; 22800-004 replicate 3; 22800-005 replicate 1; 22800-007 replicate 1; 22800-008 replicate 3; 22800-011 replicates 2 and 3; 22800-014 replicate 1; 22800-015 replicate 2; 22800-017 replicate 3; 22800-018 replicate 2; 22800-019 replicate 3; 22800-022 replicate 3.)

Table 7. Ash Free Dry Biomass Summary and Statistical Analysis. *C. dilutus* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22802. January 2013.

Ash Free Dry Biomass Summary								
Field ID	ESI Code	Sample Number	Reps	Mean	Minimum	Maximum	CV	Significant
Lab Control	22800-000	000	8	1.202	0.725	1.775	29.77%	-
UPRT18I	22800-001	001	7	1.054	0.605	1.531	30.17%	No
UPRT18H	22800-002	002	6	1.196	0.800	1.806	28.74%	No
UPRT18J	22800-003	003	8	1.191	0.638	1.558	29.52%	No
UPRT18K	22800-004	004	7	1.217	1.035	1.569	14.43%	No
UPRT19J	22800-005	005	-	-	-	-	-	-
UPRT19K	22800-006	006	8	1.028	0.403	1.431	34.53%	No
UPRT19L	22800-007	007	7	1.079	0.740	1.273	17.77%	No
UPRT19M	22800-008	008	7	1.203	0.948	1.397	15.89%	No
UPRT20A	22800-009	009	8	1.248	0.903	1.861	30.30%	No
UPRT20B	22800-010	010	8	1.307	0.660	1.844	33.01%	No
UPRT20C	22800-011	011	6	1.430	0.838	2.016	27.13%	No
UPRT20D	22800-012	012	8	1.059	0.689	1.279	21.74%	No
UPRT20E	22800-013	013	8	1.169	0.644	1.567	27.25%	No
UPRT20F	22800-014	014	7	0.631	0.180	1.248	50.56%	Yes
UPRT20G	22800-015	015	7	1.158	0.624	1.608	29.66%	No
UPRT21A	22800-016	016	8	1.092	0.850	1.430	17.18%	No
UPRT21B	22800-017	017	7	1.351	0.976	1.637	20.56%	No
UPRT21C	22800-018	018	7	1.092	0.464	1.680	34.66%	No
UPRT21D	22800-019	019	7	1.198	0.887	1.466	16.40%	No
UPRT21E	22800-020	020	8	1.038	0.392	1.451	39.39%	No
UPRT21F	22800-021	021	8	1.368	0.803	1.814	21.60%	No
UPRT21G	22800-022	022	7	1.050	0.698	1.249	22.77%	No
UPRT22A	22800-023	023	8	1.010	0.485	1.248	23.33%	No
UPRT22B	22800-024	024	8	1.130	0.774	1.424	20.43%	No

Note: During the total weight data collection there were 15 pans that were inadvertently tipped which resulted in loss of dried material. As a consequence these replicates could not be analyzed for the growth endpoints. (These replicates were: 22800-001 replicate 3; 22800-002 replicates 1 and 3; 22800-004 replicate 3; 22800-005 replicate 1; 22800-007 replicate 1; 22800-008 replicate 3; 22800-011 replicates 2 and 3; 22800-014 replicate 1; 22800-015 replicate 2; 22800-017 replicate 3; 22800-018 replicate 2; 22800-019 replicate 3; 22800-022 replicate 3.)

Table 8. Recovered Larvae Ash Free Dry Biomass Summary and Statistical Analysis. *C. dilutus* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22802. January 2013.

Recovered Larvae Ash Free Dry Biomass Summary (mg)

Field ID	ESI Code	Sample Number	Reps	Mean	Minimum	Maximum	CV	Significant
Lab Control	22800-000	000	8	1.824	1.481	2.470	19.42%	
UPRT18I	22800-001	001	7	1.169	0.605	1.701	31.33%	Yes
UPRT18H	22800-002	002	6	1.411	0.889	1.806	22.26%	Yes
UPRT18J	22800-003	003	8	1.363	0.797	1.948	30.57%	Yes
UPRT18K	22800-004	004	7	1.251	1.077	1.569	12.44%	Yes
UPRT19J	22800-005	005	-	-	-	-	-	-
UPRT19K	22800-006	006	8	1.174	0.403	1.431	27.92%	Yes
UPRT19L	22800-007	007	7	1.257	0.822	1.610	22.60%	Yes
UPRT19M	22800-008	008	7	1.340	1.050	1.534	11.44%	Yes
UPRT20A	22800-009	009	8	1.377	0.976	1.861	23.09%	Yes
UPRT20B	22800-010	010	8	1.477	0.733	2.064	29.57%	No
UPRT20C	22800-011	011	6	1.545	1.048	2.016	20.44%	No
UPRT20D	22800-012	012	8	1.164	0.689	1.558	26.68%	Yes
UPRT20E	22800-013	013	8	1.355	0.920	1.764	24.20%	Yes
UPRT20F	22800-014	014	7	0.651	0.180	1.387	56.04%	Yes
UPRT20G	22800-015	015	7	1.491	0.624	1.860	28.11%	No
UPRT21A	22800-016	016	8	1.435	1.048	2.043	23.91%	Yes
UPRT21B	22800-017	017	7	1.656	1.084	2.480	26.94%	No
UPRT21C	22800-018	018	7	1.240	0.928	1.867	27.01%	Yes
UPRT21D	22800-019	019	7	1.313	1.037	1.606	15.14%	Yes
UPRT21E	22800-020	020	8	1.299	0.560	1.803	32.67%	Yes
UPRT21F	22800-021	021	8	1.865	1.516	2.591	19.64%	No
UPRT21G	22800-022	022	7	1.288	0.712	1.988	29.76%	Yes
UPRT22A	22800-023	023	8	1.163	0.693	1.413	19.62%	Yes
UPRT22B	22800-024	024	8	1.356	0.979	1.641	15.50%	Yes

Note: During the total weight data collection there were 15 pans that were inadvertently tipped which resulted in loss of dried material. As a consequence these replicates could not be analyzed for the growth endpoints. (These replicates were: 22800-001 replicate 3; 22800-002 replicates 1 and 3; 22800-004 replicate 3; 22800-005 replicate 1; 22800-007 replicate 1; 22800-008 replicate 3; 22800-011 replicates 2 and 3; 22800-014 replicate 1; 22800-015 replicate 2; 22800-017 replicate 3; 22800-018 replicate 2; 22800-019 replicate 3; 22800-022 replicate 3.)

Recovered Larvae Mean Ash Free Dry Biomass is computed as:

$$\text{Ash Free Dry Weight} / (\# \text{ Larvae Exposed} - \# \text{ Larvae Pupated} + \text{ Emerged})$$

Standard Mean Ash Free Dry Biomass is computed as:

$$\text{Ash Free Dry Weight} / \# \text{ Larvae Exposed}$$

Table 9. Comparison of Standard and Recovered Larvae Ash Free Dry Biomass Summaries and Statistical Analysis Endpoint. *C. dilutus* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22802. January 2013.

Field ID	ESI Code	Sample Number	Reps	Standard Ash Free Dry Biomass Summary (mg)			Recovered Larvae Ash Free Dry Biomass Summary (mg)		
				Mean	CV	Significant	Mean	CV	Significant
Lab Control	22800-000	000	8	1.202	29.77%	-	1.824	19.42%	
UPRT18I	22800-001	001	7	1.054	30.17%	No	1.169	31.33%	Yes
UPRT18H	22800-002	002	6	1.196	28.74%	No	1.411	22.26%	Yes
UPRT18J	22800-003	003	8	1.191	29.52%	No	1.363	30.57%	Yes
UPRT18K	22800-004	004	7	1.217	14.43%	No	1.251	12.44%	Yes
UPRT19J	22800-005	005	-	-	-	-	-	-	-
UPRT19K	22800-006	006	8	1.028	34.53%	No	1.174	27.92%	Yes
UPRT19L	22800-007	007	7	1.079	17.77%	No	1.257	22.60%	Yes
UPRT19M	22800-008	008	7	1.203	15.89%	No	1.340	11.44%	Yes
UPRT20A	22800-009	009	8	1.248	30.30%	No	1.377	23.09%	Yes
UPRT20B	22800-010	010	8	1.307	33.01%	No	1.477	29.57%	No
UPRT20C	22800-011	011	6	1.430	27.13%	No	1.545	20.44%	No
UPRT20D	22800-012	012	8	1.059	21.74%	No	1.164	26.68%	Yes
UPRT20E	22800-013	013	8	1.169	27.25%	No	1.355	24.20%	Yes
UPRT20F	22800-014	014	7	0.631	50.56%	Yes	0.651	56.04%	Yes
UPRT20G	22800-015	015	7	1.158	29.66%	No	1.491	28.11%	No
UPRT21A	22800-016	016	8	1.092	17.18%	No	1.435	23.91%	Yes
UPRT21B	22800-017	017	7	1.351	20.56%	No	1.656	26.94%	No
UPRT21C	22800-018	018	7	1.092	34.66%	No	1.240	27.01%	Yes
UPRT21D	22800-019	019	7	1.198	16.40%	No	1.313	15.14%	Yes
UPRT21E	22800-020	020	8	1.038	39.39%	No	1.299	32.67%	Yes
UPRT21F	22800-021	021	8	1.368	21.60%	No	1.865	19.64%	No
UPRT21G	22800-022	022	7	1.050	22.77%	No	1.288	29.76%	Yes
UPRT22A	22800-023	023	8	1.010	23.33%	No	1.163	19.62%	Yes
UPRT22B	22800-024	024	8	1.130	20.43%	No	1.356	15.50%	Yes

Note: During the total weight data collection there were 15 pans that were inadvertently tipped which resulted in loss of dried material. As a consequence these replicates could not be analyzed for the growth endpoints. (These replicates were: 22800-001 replicate 3; 22800-002 replicates 1 and 3; 22800-004 replicate 3; 22800-005 replicate 1; 22800-007 replicate 1; 22800-008 replicate 3; 22800-011 replicates 2 and 3; 22800-014 replicate 1; 22800-015 replicate 2; 22800-017 replicate 3; 22800-018 replicate 2; 22800-019 replicate 3; 22800-022 replicate 3.)

Table 10. Comparison of Growth Endpoints, Mean Ash Free Dry Weight, Mean Ash Free Dry Biomass (Standard) and Mean Recovered Larvae Ash Free Dry Biomass. *C. dilutus* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22802. January 2013.

Field ID	ESI Code	Sample Number	Mean Ash Free Dry Weight (mg)	Standard Mean Ash Free Dry Biomass (mg)	Mean Recovered Larvae Ash Free Dry Biomass (mg)			
Lab Control	22800-000	000	1.876	-	1.824	-		
UPRT18I	22800-001	001	1.711	No	1.054	No	1.169	Yes
UPRT18H	22800-002	002	1.550	No	1.196	No	1.411	Yes
UPRT18J	22800-003	003	1.545	Yes	1.191	No	1.363	Yes
UPRT18K	22800-004	004	1.466	Yes / Yes	1.217	No	1.251	Yes
UPRT19J	22800-005	005	-	-	-	-	-	-
UPRT19K	22800-006	006	1.693	No	1.028	No	1.174	Yes
UPRT19L	22800-007	007	1.645	No	1.079	No	1.257	Yes
UPRT19M	22800-008	008	1.691	No	1.203	No	1.340	Yes
UPRT20A	22800-009	009	1.912	No / No	1.248	No	1.377	Yes
UPRT20B	22800-010	010	1.951	No	1.307	No	1.477	No
UPRT20C	22800-011	011	1.767	No	1.430	No	1.545	No
UPRT20D	22800-012	012	1.575	Yes / Yes	1.059	No	1.164	Yes
UPRT20E	22800-013	013	1.636	No	1.169	No	1.355	Yes
UPRT20F	22800-014	014	1.207	Yes	0.631	Yes	0.651	Yes
UPRT20G	22800-015	015	1.760	No	1.158	No	1.491	No
UPRT21A	22800-016	016	1.697	No	1.092	No	1.435	Yes
UPRT21B	22800-017	017	2.235	No	1.351	No	1.656	No
UPRT21C	22800-018	018	1.957	No	1.092	No	1.240	Yes
UPRT21D	22800-019	019	2.067	No	1.198	No	1.313	Yes
UPRT21E	22800-020	020	1.637	Yes	1.038	No	1.299	Yes
UPRT21F	22800-021	021	2.232	No	1.368	No	1.865	No
UPRT21G	22800-022	022	1.712	No	1.050	No	1.288	Yes
UPRT22A	22800-023	023	1.967	No	1.010	No	1.163	Yes
UPRT22B	22800-024	024	1.762	No	1.130	No	1.356	Yes

Note: “Yes / Yes” Indicates that an outlier was detected and the result of the statistical analysis was not changed when the outlier was excluded.

“No / No” Indicates that an outlier was detected and the result of the statistical analysis was not changed when the outlier was excluded.

During the total weight data collection there were 15 pans that were inadvertently tipped which resulted in loss of dried material. As a consequence these replicates could not be analyzed for the growth endpoints. (These replicates were: 22800-001 replicate 3; 22800-002 replicates 1 and 3; 22800-004 replicate 3; 22800-005 replicate 1; 22800-007 replicate 1; 22800-008 replicate 3; 22800-011 replicates 2 and 3; 22800-014 replicate 1; 22800-015 replicate 2; 22800-017 replicate 3; 22800-018 replicate 2; 22800-019 replicate 3; 22800-022 replicate 3.)

Table 11. Summary of Water Qualities. *C. dilutus* Sediment Assay. Lower Passaic River Remedial Investigation. ESI Study 22802. January 2013.

Field ID	ESI Code	Sample Number	Day	Overlying Water				Pore Water Ammonia (mg/L)
				Conductance (µS/cm)	Alkalinity (mg/L)	Hardness (mg/L)	Ammonia (mg/L)	
Lab Control	22800-000	000	0	349	61	89	0.15	<0.5
UPRT18I	22800-001	001	0	316	42	82	<0.1	1.4
UPRT18H	22800-002	002	0	314	46	80	0.22	2.3
UPRT18J	22800-003	003	0	323	38	84	0.2	3.4
UPRT18K	22800-004	004	0	302	46	75	<0.1	0.82
UPRT19J	22800-005	005	0	312	36	79	0.21	3.7
UPRT19K	22800-006	006	0	310	49	78	0.2	3.7
UPRT19L	22800-007	007	0	308	45	84	<0.1	1
UPRT19M	22800-008	008	0	314	42	82	<0.1	0.55
UPRT20A	22800-009	009	0	293	49	73	0.5	5.8
UPRT20B	22800-010	010	0	378	60	83	<0.1	3.3
UPRT20C	22800-011	011	0	337	65	87	2	13
UPRT20D	22800-012	012	0	334	55	82	2.1	6.8
UPRT20E	22800-013	013	0	313	43	83	<0.1	1.4
UPRT20F	22800-014	014	0	342	31	86	2.6	9.5
UPRT20G	22800-015	015	0	321	55	79	0.85	6.4
UPRT21A	22800-016	016	0	328	51	86	0.37	1.5
UPRT21B	22800-017	017	0	416	94	87	8.5	26
UPRT21C	22800-018	018	0	343	69	100	1.1	9
UPRT21D	22800-019	019	0	340	61	94	0.41	6
UPRT21E	22800-020	020	0	323	54	92	<0.1	0.71
UPRT21F	22800-021	021	0	315	53	75	0.98	7.3
UPRT21G	22800-022	022	0	310	45	81	<0.1	0.89
UPRT22A	22800-023	023	0	296	48	74	<0.1	<0.5
UPRT22B	22800-024	024	0	333	72	95	<0.1	0.87
Lab Control	22800-000	000	10	351	56	80	<0.1	<0.5
UPRT18I	22800-001	001	10	297	48	81	0.16	0.79
UPRT18H	22800-002	002	10	296	47	71	0.17	0.88
UPRT18J	22800-003	003	10	308	47	75	<0.1	0.75
UPRT18K	22800-004	004	10	303	48	85	<0.1	0.86
UPRT19J	22800-005	005	10	318	53	78	0.58	4.7
UPRT19K	22800-006	006	10	297	44	78	<0.1	0.89
UPRT19L	22800-007	007	10	287	46	69	0.18	0.73
UPRT19M	22800-008	008	10	294	46	74	<0.1	<0.5
UPRT20A	22800-009	009	10	300	47	74	<0.1	0.94
UPRT20B	22800-010	010	10	303	49	71	0.12	3.1
UPRT20C	22800-011	011	10	308	59	84	<0.1	2.4
UPRT20D	22800-012	012	10	302	50	77	<0.1	1.1
UPRT20E	22800-013	013	10	296	45	77	<0.1	<0.5
UPRT20F	22800-014	014	10	306	46	72	<0.1	3.3
UPRT20G	22800-015	015	10	300	51	78	<0.1	1.5
UPRT21A	22800-016	016	10	307	50	74	0.1	<0.5
UPRT21B	22800-017	017	10	307	60	64	3	4.8
UPRT21C	22800-018	018	10	312	56	80	<0.1	1.1
UPRT21D	22800-019	019	10	308	52	77	<0.1	1.1
UPRT21E	22800-020	020	10	299	50	70	<0.1	0.56
UPRT21F	22800-021	021	10	300	45	70	<0.1	2
UPRT21G	22800-022	022	10	299	48	73	<0.1	<0.5
UPRT22A	22800-023	023	10	293	48	72	<0.1	<0.5
UPRT22B	22800-024	024	10	297	50	74	<0.1	<0.5

Comments:

Additional water quality data are provided in Appendix A.

APPENDIX A: RAW DATA AND STATISTICAL SUPPORT

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Chironomus dilutus 10 Day Sediment Assay

Study: 22802		Client: Windward Environmental, LLC		Project: Lower Passaic River Remedial Investigation	
Day	Date	Overlying Water Qualities Measured, Water Renewed and Chambers Fed		Renewal Water Specific Conductivity	Notes
		Check	Initial		
0	12/07/12	✓	An/JTP	266	Aeration was added to test
1	12/08/12	✓	JM	270	
2	12/09/12	✓	JM/ND	264	
3	12/10/12	✓	AM	287	Power surge caused temps issues.*
4	12/11/12	✓	An/JTP	275	
5	12/12/12	✓	JTP/JM	272	
6	12/13/12	✓	An/JTP	269	
7	12/14/12	✓	AM	270	
8	12/15/12	✓	ND/JM	269	
9	12/16/12	✓	AM	270	
10	12/17/12	✓	AM	265	
Overlying Water and Renewal Water: Alkalinity, Hardness & Ammonia on Days 0 and 10			Day 0	Initial: An/JTP	
Pore Water: Ammonia & pH on Days 0 & 10			Day 10	Initial: AM	
Notes: 23 °C	Feed 1 mL of 6 g/L Tetramin Flake Daily	Aerate if DO is below 2.5 mg/L		Two Volume Additions Daily	

Notes:
* Power was restored to water bath system and temps were brought within range.

Sample Key

Client: Windward Environmental, LLC.
Project: Lower Passaic River Remedial Investigation
Study: 22802

LabID	Field ID	Sample Number	Sampled	Received		
22800-000	Lab Control	000				
22800-001	UPRT18I	001	11/12/12	1013	11/17/12	1305
22800-002	UPRT18H	002	11/12/12	1217	11/17/12	1305
22800-003	UPRT18J	003	11/12/12	1321	11/17/12	1305
22800-004	UPRT18K	004	11/12/12	1437	11/17/12	1305
22800-005	UPRT19J	005	11/13/12	820	11/17/12	1305
22800-006	UPRT19K	006	11/13/12	946	11/17/12	1305
22800-007	UPRT19L	007	11/13/12	1055	11/17/12	1305
22800-008	UPRT19M	008	11/13/12	1159	11/17/12	1305
22800-009	UPRT20A	009	11/13/12	1330	11/17/12	1305
22800-010	UPRT20B	010	11/13/12	1441	11/17/12	1305
22800-011	UPRT20C	011	11/14/12	815	11/17/12	1305
22800-012	UPRT20D	012	11/14/12	914	11/17/12	1305
22800-013	UPRT20E	013	11/14/12	1112	11/17/12	1305
22800-014	UPRT20F	014	11/14/12	1149	11/17/12	1305
22800-015	UPRT20G	015	11/14/12	1252	11/17/12	1305
22800-016	UPRT21A	016	11/14/12	1352	11/17/12	1305
22800-017	UPRT21B	017	11/15/12	819	11/17/12	1305
22800-018	UPRT21C	018	11/15/12	917	11/17/12	1305
22800-019	UPRT21D	019	11/15/12	1008	11/17/12	1305
22800-020	UPRT21E	020	11/15/12	1052	11/17/12	1305
22800-021	UPRT21F	021	11/15/12	1129	11/17/12	1305
22800-022	UPRT21G	022	11/15/12	1225	11/17/12	1305
22800-023	UPRT22A	023	11/16/12	806	11/17/12	1305
22800-024	UPRT22B	024	11/16/12	909	11/17/12	1305

CETIS Test Data Worksheet

Report Date: 15 Jan-13 12:16 (p 1 of 4)
Test Code: 03-8637-2377/22800Cd

Chironomus 10-d Survival and Growth Sediment Test											EnviroSystems, Inc.
Start Date:	07 Dec-12 12:00	Species:	Chironomus dilutus	Sample Code:	22800-000						
End Date:	17 Dec-12 12:00	Protocol:	EPA/600/R-99/064 (2000)	Sample Source:	Lower Passaic River Ecological Risk						
Sample Date:	28 Nov-12 12:00	Material:	Laboratory Control Sediment	Sample Station:	Lab Control; 22800-000						
Sample Code	Rep	Pos	# Exposed	# Survived	Total Weight-mg	Ashed Weight-mg	Pan Count	Mean Length-mm	TareWt	Notes	
22800-000	1	20									
22800-000	2	50									
22800-000	3	52									
22800-000	4	94									
22800-000	5	125									
22800-000	6	144									
22800-000	7	171									
22800-000	8	177									
22800-001	1	22									
22800-001	2	45									
22800-001	3	62									
22800-001	4	77									
22800-001	5	118									
22800-001	6	135									
22800-001	7	175									
22800-001	8	187									
22800-002	1	8									
22800-002	2	28									
22800-002	3	57									
22800-002	4	90									
22800-002	5	111									
22800-002	6	146									
22800-002	7	160									
22800-002	8	179									
22800-003	1	23									
22800-003	2	43									
22800-003	3	53									
22800-003	4	89									
22800-003	5	124									
22800-003	6	128									
22800-003	7	165									
22800-003	8	185									
22800-004	1	24									
22800-004	2	37									
22800-004	3	55									
22800-004	4	80									
22800-004	5	119									
22800-004	6	150									
22800-004	7	168									
22800-004	8	195									
22800-005	1	13									
22800-005	2	41									
22800-005	3	61									
22800-005	4	95									
22800-005	5	121									
22800-005	6	132									
22800-005	7	173									

CETIS Test Data Worksheet

Report Date:

15 Jan-13 12:16 (p 2 of 4)

Test Code:

03-8637-2377/22800Cd

Sample Code	Rep	Pos	# Exposed	# Survived	Total Weight-mg	Ashed Weight-mg	Pan Count	Mean Length-mm	TareWt	Notes
22800-005	8	196								
22800-006	1	11								
22800-006	2	33								
22800-006	3	74								
22800-006	4	76								
22800-006	5	120								
22800-006	6	145								
22800-006	7	167								
22800-006	8	183								
22800-007	1	1								
22800-007	2	36								
22800-007	3	69								
22800-007	4	83								
22800-007	5	113								
22800-007	6	141								
22800-007	7	172								
22800-007	8	190								
22800-008	1	19								
22800-008	2	29								
22800-008	3	56								
22800-008	4	87								
22800-008	5	122								
22800-008	6	137								
22800-008	7	161								
22800-008	8	198								
22800-009	1	5								
22800-009	2	30								
22800-009	3	70								
22800-009	4	78								
22800-009	5	107								
22800-009	6	131								
22800-009	7	174								
22800-009	8	178								
22800-010	1	21								
22800-010	2	40								
22800-010	3	58								
22800-010	4	92								
22800-010	5	105								
22800-010	6	143								
22800-010	7	152								
22800-010	8	180								
22800-011	1	10								
22800-011	2	39								
22800-011	3	64								
22800-011	4	79								
22800-011	5	123								
22800-011	6	126								
22800-011	7	156								
22800-011	8	186								
22800-012	1	25								
22800-012	2	44								
22800-012	3	72								

CETIS Test Data Worksheet

Report Date:

15 Jan-13 12:16 (p 3 of 4)

Test Code:

03-8637-2377/22800Cd

Sample Code	Rep	Pos	# Exposed	# Survived	Total Weight-mg	Ashed Weight-mg	Pan Count	Mean Length-mm	TareWt	Notes
22800-012	4	86								
22800-012	5	115								
22800-012	6	139								
22800-012	7	153								
22800-012	8	176								
22800-013	1	7								
22800-013	2	42								
22800-013	3	75								
22800-013	4	81								
22800-013	5	110								
22800-013	6	130								
22800-013	7	154								
22800-013	8	181								
22800-014	1	4								
22800-014	2	47								
22800-014	3	71								
22800-014	4	84								
22800-014	5	101								
22800-014	6	133								
22800-014	7	162								
22800-014	8	199								
22800-015	1	2								
22800-015	2	49								
22800-015	3	63								
22800-015	4	99								
22800-015	5	102								
22800-015	6	140								
22800-015	7	164								
22800-015	8	194								
22800-016	1	3								
22800-016	2	46								
22800-016	3	54								
22800-016	4	100								
22800-016	5	108								
22800-016	6	127								
22800-016	7	169								
22800-016	8	192								
22800-017	1	12								
22800-017	2	26								
22800-017	3	60								
22800-017	4	85								
22800-017	5	103								
22800-017	6	149								
22800-017	7	163								
22800-017	8	184								
22800-018	1	6								
22800-018	2	48								
22800-018	3	67								
22800-018	4	97								
22800-018	5	117								
22800-018	6	136								
22800-018	7	170								

CETIS Test Data Worksheet

Report Date:

15 Jan-13 12:16 (p 4 of 4)

Test Code:

03-8637-2377/22800Cd

Sample Code	Rep	Pos	# Exposed	# Survived	Total Weight-mg	Ashed Weight-mg	Pan Count	Mean Length-mm	TareWt	Notes
22800-018	8	193								
22800-019	1	14								
22800-019	2	27								
22800-019	3	59								
22800-019	4	88								
22800-019	5	109								
22800-019	6	147								
22800-019	7	166								
22800-019	8	188								
22800-020	1	16								
22800-020	2	35								
22800-020	3	66								
22800-020	4	98								
22800-020	5	116								
22800-020	6	148								
22800-020	7	155								
22800-020	8	189								
22800-021	1	18								
22800-021	2	32								
22800-021	3	68								
22800-021	4	96								
22800-021	5	114								
22800-021	6	134								
22800-021	7	158								
22800-021	8	200								
22800-022	1	17								
22800-022	2	34								
22800-022	3	51								
22800-022	4	91								
22800-022	5	104								
22800-022	6	129								
22800-022	7	151								
22800-022	8	191								
22800-023	1	15								
22800-023	2	31								
22800-023	3	73								
22800-023	4	93								
22800-023	5	112								
22800-023	6	142								
22800-023	7	159								
22800-023	8	182								
22800-024	1	9								
22800-024	2	38								
22800-024	3	65								
22800-024	4	82								
22800-024	5	106								
22800-024	6	138								
22800-024	7	157								
22800-024	8	197								

YSI 556 MPS Sample Reading Order

Study: 22802

Client: Windward Environmental, LLC

Project: Lower Passaic River Remedial Investigation

Reading Number	Field ID	Receipt Number	Sample Number
0	Lab Control	22800-000	000
1	UPRT18I	22800-001	001
2	UPRT18H	22800-002	002
3	UPRT18J	22800-003	003
4	UPRT18K	22800-004	004
5	UPRT19J	22800-005	005
6	UPRT19K	22800-006	006
7	UPRT19L	22800-007	007
8	UPRT19M	22800-008	008
9	UPRT20A	22800-009	009
10	UPRT20B	22800-010	010
11	UPRT20C	22800-011	011
12	UPRT20D	22800-012	012
13	UPRT20E	22800-013	013
14	UPRT20F	22800-014	014
15	UPRT20G	22800-015	015
16	UPRT21A	22800-016	016
17	UPRT21B	22800-017	017
18	UPRT21C	22800-018	018
19	UPRT21D	22800-019	019
20	UPRT21E	22800-020	020
21	UPRT21F	22800-021	021
22	UPRT21G	22800-022	022
23	UPRT22A	22800-023	023
24	UPRT22B	22800-024	024

STUDY: 22802
CLIENT: Windward Environmental, LLC.
PROJECT: Lower Passaic River Remedial Investigation
ASSAY: Chironomus dilutus 10 Day Sediment Assay
TASK: Daily Overlying Water Qualities

	Temp	DO Conc	pH	SpCond	Salinity
Mean:	22.29	7.92		304	0.15
Minimum:	19.27	2.08	6.64	271	0.13
Maximum:	24.38	8.86	7.99	416	0.20

LabID	Field ID	Sample Number	Day	Datetime M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-000	Lab Control	000	0	12/07/2012 09:11:12	21.35	5.75	7.13	349	0.17
22800-001	UPRT18I	001	0	12/07/2012 09:11:36	21.66	6.37	7.02	316	0.15
22800-002	UPRT18H	002	0	12/07/2012 09:11:49	21.70	6.79	7.00	314	0.15
22800-003	UPRT18J	003	0	12/07/2012 09:12:17	21.79	6.64	6.90	323	0.16
22800-004	UPRT18K	004	0	12/07/2012 09:12:47	21.85	6.37	6.90	302	0.15
22800-005	UPRT19J	005	0	12/07/2012 09:13:33	21.79	3.16	6.65	312	0.15
22800-006	UPRT19K	006	0	12/07/2012 09:14:04	21.98	5.99	6.79	310	0.15
22800-007	UPRT19L	007	0	12/07/2012 09:14:27	21.90	6.81	6.88	308	0.15
22800-008	UPRT19M	008	0	12/07/2012 09:14:46	21.91	7.30	6.93	314	0.15
22800-009	UPRT20A	009	0	12/07/2012 09:15:03	21.97	6.39	6.88	293	0.14
22800-010	UPRT20B	010	0	12/07/2012 09:17:09	22.14	2.08	6.64	378	0.18
22800-011	UPRT20C	011	0	12/07/2012 09:17:34	21.92	3.71	6.84	337	0.16
22800-012	UPRT20D	012	0	12/07/2012 09:18:06	22.00	5.54	6.75	334	0.16
22800-013	UPRT20E	013	0	12/07/2012 09:18:26	22.10	6.60	6.89	313	0.15
22800-014	UPRT20F	014	0	12/07/2012 09:18:44	22.00	5.84	6.75	342	0.17
22800-015	UPRT20G	015	0	12/07/2012 09:19:09	22.09	5.50	6.87	321	0.16
22800-016	UPRT21A	016	0	12/07/2012 09:19:43	22.14	6.52	6.97	328	0.16
22800-017	UPRT21B	017	0	12/07/2012 09:20:24	22.24	3.86	6.79	416	0.20
22800-018	UPRT21C	018	0	12/07/2012 09:20:50	22.27	5.30	6.99	343	0.17
22800-019	UPRT21D	019	0	12/07/2012 09:21:07	22.30	5.32	7.00	340	0.16
22800-020	UPRT21E	020	0	12/07/2012 09:21:19	22.29	5.45	7.00	323	0.16
22800-021	UPRT21F	021	0	12/07/2012 09:21:32	22.33	5.71	6.95	315	0.15
22800-022	UPRT21G	022	0	12/07/2012 09:21:57	22.33	6.75	6.99	310	0.15
22800-023	UPRT22A	023	0	12/07/2012 09:22:17	22.39	7.41	7.12	296	0.14
22800-024	UPRT22B	024	0	12/07/2012 09:22:38	22.36	4.74	7.04	333	0.16
22800-000	Lab Control	000	1	12/08/2012 12:33:10	19.87	8.80	7.73	335	0.16
22800-001	UPRT18I	001	1	12/08/2012 12:34:06	19.92	8.35	7.63	312	0.15
22800-002	UPRT18H	002	1	12/08/2012 12:34:42	19.95	7.41	7.43	315	0.15
22800-003	UPRT18J	003	1	12/08/2012 12:35:19	19.93	8.65	7.60	329	0.16
22800-004	UPRT18K	004	1	12/08/2012 12:35:49	19.89	8.72	7.67	304	0.15
22800-005	UPRT19J	005	1	12/08/2012 12:36:08	19.87	8.67	7.58	311	0.15
22800-006	UPRT19K	006	1	12/08/2012 12:36:36	19.93	7.96	7.48	314	0.15
22800-007	UPRT19L	007	1	12/08/2012 12:37:03	20.01	8.26	7.51	300	0.14
22800-008	UPRT19M	008	1	12/08/2012 12:37:19	20.04	8.48	7.56	298	0.14
22800-009	UPRT20A	009	1	12/08/2012 12:37:41	20.09	8.70	7.65	289	0.14
22800-010	UPRT20B	010	1	12/08/2012 12:38:18	20.16	8.10	7.60	320	0.15
22800-011	UPRT20C	011	1	12/08/2012 12:38:50	20.14	8.55	7.67	316	0.15
22800-012	UPRT20D	012	1	12/08/2012 12:39:09	20.14	8.58	7.67	310	0.15
22800-013	UPRT20E	013	1	12/08/2012 12:39:34	20.13	8.54	7.68	298	0.14
22800-014	UPRT20F	014	1	12/08/2012 12:40:02	20.09	8.79	7.65	318	0.15
22800-015	UPRT20G	015	1	12/08/2012 12:40:23	20.15	8.41	7.59	312	0.15
22800-016	UPRT21A	016	1	12/08/2012 12:40:42	20.13	8.47	7.67	316	0.15

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-017	UPRT21B	017	1	12/08/2012 12:41:11	20.23	8.06	7.67	386	0.19
22800-018	UPRT21C	018	1	12/08/2012 12:41:34	20.23	8.03	7.69	345	0.17
22800-019	UPRT21D	019	1	12/08/2012 12:41:51	20.22	8.30	7.78	345	0.17
22800-020	UPRT21E	020	1	12/08/2012 12:42:06	20.27	8.61	7.81	314	0.15
22800-021	UPRT21F	021	1	12/08/2012 12:42:32	20.28	8.39	7.65	315	0.15
22800-022	UPRT21G	022	1	12/08/2012 12:43:11	20.23	8.56	7.70	311	0.15
22800-023	UPRT22A	023	1	12/08/2012 12:43:28	20.27	8.65	7.71	299	0.14
22800-024	UPRT22B	024	1	12/08/2012 12:43:44	20.26	8.64	7.73	312	0.15
22800-000	Lab Control	000	2	12/09/2012 17:35:40	19.27	8.77	7.60	307	0.15
22800-001	UPRT18I	001	2	12/09/2012 17:36:18	19.43	8.51	7.51	304	0.15
22800-002	UPRT18H	002	2	12/09/2012 17:36:34	19.46	8.38	7.43	307	0.15
22800-003	UPRT18J	003	2	12/09/2012 17:36:52	19.51	8.35	7.40	315	0.15
22800-004	UPRT18K	004	2	12/09/2012 17:37:14	19.53	8.74	7.47	295	0.14
22800-005	UPRT19J	005	2	12/09/2012 17:37:31	19.56	8.26	7.33	307	0.15
22800-006	UPRT19K	006	2	12/09/2012 17:38:25	19.63	8.60	7.43	292	0.14
22800-007	UPRT19L	007	2	12/09/2012 17:38:36	19.65	8.65	7.42	293	0.14
22800-008	UPRT19M	008	2	12/09/2012 17:38:55	19.66	8.61	7.45	295	0.14
22800-009	UPRT20A	009	2	12/09/2012 17:39:12	19.69	8.66	7.44	273	0.13
22800-010	UPRT20B	010	2	12/09/2012 17:39:36	19.71	8.72	7.47	302	0.15
22800-011	UPRT20C	011	2	12/09/2012 17:39:55	19.65	8.69	7.52	301	0.15
22800-012	UPRT20D	012	2	12/09/2012 17:40:37	19.59	8.53	7.53	296	0.14
22800-013	UPRT20E	013	2	12/09/2012 17:40:55	19.64	8.63	7.53	271	0.13
22800-014	UPRT20F	014	2	12/09/2012 17:41:10	19.63	8.85	7.48	304	0.15
22800-015	UPRT20G	015	2	12/09/2012 17:41:44	19.68	8.53	7.44	296	0.14
22800-016	UPRT21A	016	2	12/09/2012 17:42:10	19.71	8.67	7.51	304	0.15
22800-017	UPRT21B	017	2	12/09/2012 17:42:40	19.75	8.32	7.47	342	0.17
22800-018	UPRT21C	018	2	12/09/2012 17:43:07	19.76	8.49	7.51	303	0.15
22800-019	UPRT21D	019	2	12/09/2012 17:43:23	19.80	8.61	7.53	316	0.15
22800-020	UPRT21E	020	2	12/09/2012 17:43:36	19.82	8.71	7.56	302	0.15
22800-021	UPRT21F	021	2	12/09/2012 17:43:51	19.83	8.74	7.49	293	0.14
22800-022	UPRT21G	022	2	12/09/2012 17:44:05	19.83	8.75	7.47	288	0.14
22800-023	UPRT22A	023	2	12/09/2012 17:44:32	19.92	8.64	7.51	285	0.14
22800-024	UPRT22B	024	2	12/09/2012 17:44:54	19.94	8.72	7.56	299	0.14
22800-000	Lab Control	000	3	12/10/2012 09:55:04	19.85	8.62	7.41	290	0.14
22800-001	UPRT18I	001	3	12/10/2012 09:55:24	19.80	8.51	7.43	294	0.14
22800-002	UPRT18H	002	3	12/10/2012 09:55:32	19.80	8.53	7.40	292	0.14
22800-003	UPRT18J	003	3	12/10/2012 09:55:40	19.81	8.41	7.34	302	0.15
22800-004	UPRT18K	004	3	12/10/2012 09:55:49	19.83	8.53	7.40	288	0.14
22800-005	UPRT19J	005	3	12/10/2012 09:55:57	19.84	8.64	7.40	297	0.14
22800-006	UPRT19K	006	3	12/10/2012 09:56:05	19.86	8.41	7.36	284	0.14
22800-007	UPRT19L	007	3	12/10/2012 09:56:15	19.89	8.51	7.39	284	0.14
22800-008	UPRT19M	008	3	12/10/2012 09:56:24	19.91	8.60	7.42	285	0.14
22800-009	UPRT20A	009	3	12/10/2012 09:56:32	19.91	8.70	7.43	276	0.13
22800-010	UPRT20B	010	3	12/10/2012 09:56:42	19.93	8.78	7.46	294	0.14
22800-011	UPRT20C	011	3	12/10/2012 09:56:50	19.95	8.77	7.49	291	0.14
22800-012	UPRT20D	012	3	12/10/2012 09:57:05	19.88	8.86	7.37	290	0.14
22800-013	UPRT20E	013	3	12/10/2012 09:57:15	19.90	8.82	7.49	281	0.14
22800-014	UPRT20F	014	3	12/10/2012 09:57:25	19.85	8.85	7.50	293	0.14
22800-015	UPRT20G	015	3	12/10/2012 09:57:34	19.87	8.84	7.49	286	0.14
22800-016	UPRT21A	016	3	12/10/2012 09:57:43	19.90	8.78	7.50	292	0.14
22800-017	UPRT21B	017	3	12/10/2012 09:57:51	19.94	8.77	7.49	308	0.15
22800-018	UPRT21C	018	3	12/10/2012 09:57:58	19.98	8.61	7.47	293	0.14

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-019	UPRT21D	019	3	12/10/2012 09:58:07	20.01	8.55	7.49	300	0.14
22800-020	UPRT21E	020	3	12/10/2012 09:58:16	20.03	8.63	7.54	290	0.14
22800-021	UPRT21F	021	3	12/10/2012 09:58:30	20.06	8.68	7.54	283	0.14
22800-022	UPRT21G	022	3	12/10/2012 09:58:42	20.07	8.57	7.53	278	0.13
22800-023	UPRT22A	023	3	12/10/2012 09:58:51	20.09	8.64	7.52	278	0.13
22800-024	UPRT22B	024	3	12/10/2012 09:58:58	20.11	8.72	7.54	285	0.14
22800-000	Lab Control	000	4	12/11/2012 09:54:48	24.09	7.85	7.53	301	0.15
22800-001	UPRT18I	001	4	12/11/2012 09:55:09	24.13	7.72	7.48	306	0.15
22800-002	UPRT18H	002	4	12/11/2012 09:55:18	24.17	7.65	7.44	305	0.15
22800-003	UPRT18J	003	4	12/11/2012 09:55:31	24.23	7.55	7.46	317	0.15
22800-004	UPRT18K	004	4	12/11/2012 09:55:42	24.21	7.86	7.52	303	0.15
22800-005	UPRT19J	005	4	12/11/2012 09:55:51	24.10	7.96	7.54	308	0.15
22800-006	UPRT19K	006	4	12/11/2012 09:56:00	24.08	8.00	7.53	302	0.15
22800-007	UPRT19L	007	4	12/11/2012 09:56:09	24.02	7.98	7.52	308	0.15
22800-008	UPRT19M	008	4	12/11/2012 09:56:16	23.97	7.96	7.53	304	0.15
22800-009	UPRT20A	009	4	12/11/2012 09:56:26	23.91	8.07	7.55	289	0.14
22800-010	UPRT20B	010	4	12/11/2012 09:56:33	23.90	8.10	7.55	317	0.15
22800-011	UPRT20C	011	4	12/11/2012 09:56:42	23.95	8.10	7.57	314	0.15
22800-012	UPRT20D	012	4	12/11/2012 09:56:51	23.97	8.07	7.58	304	0.15
22800-013	UPRT20E	013	4	12/11/2012 09:57:00	23.98	8.08	7.59	305	0.15
22800-014	UPRT20F	014	4	12/11/2012 09:57:09	23.99	8.15	7.61	322	0.16
22800-015	UPRT20G	015	4	12/11/2012 09:57:18	24.05	8.13	7.59	313	0.15
22800-016	UPRT21A	016	4	12/11/2012 09:57:26	24.10	8.02	7.58	319	0.15
22800-017	UPRT21B	017	4	12/11/2012 09:57:36	24.11	7.96	7.54	323	0.16
22800-018	UPRT21C	018	4	12/11/2012 09:57:45	24.11	7.70	7.50	314	0.15
22800-019	UPRT21D	019	4	12/11/2012 09:57:55	24.21	7.76	7.54	325	0.16
22800-020	UPRT21E	020	4	12/11/2012 09:58:04	24.25	7.87	7.60	316	0.15
22800-021	UPRT21F	021	4	12/11/2012 09:58:19	24.27	7.92	7.60	307	0.15
22800-022	UPRT21G	022	4	12/11/2012 09:58:42	24.24	7.97	7.54	303	0.15
22800-023	UPRT22A	023	4	12/11/2012 09:58:53	24.37	7.97	7.58	303	0.15
22800-024	UPRT22B	024	4	12/11/2012 09:59:04	24.38	7.97	7.64	310	0.15
22800-000	Lab Control	000	5	12/12/2012 07:39:44	22.54	7.94	7.45	292	0.14
22800-001	UPRT18I	001	5	12/12/2012 07:40:07	22.75	7.76	7.41	299	0.14
22800-002	UPRT18H	002	5	12/12/2012 07:40:18	22.83	7.69	7.39	297	0.14
22800-003	UPRT18J	003	5	12/12/2012 07:40:27	22.89	7.53	7.39	307	0.15
22800-004	UPRT18K	004	5	12/12/2012 07:40:36	22.87	7.75	7.46	298	0.14
22800-005	UPRT19J	005	5	12/12/2012 07:40:54	22.71	8.01	7.20	303	0.15
22800-006	UPRT19K	006	5	12/12/2012 07:41:04	22.75	8.01	7.15	295	0.14
22800-007	UPRT19L	007	5	12/12/2012 07:41:16	22.75	8.00	7.26	299	0.14
22800-008	UPRT19M	008	5	12/12/2012 07:41:28	22.71	8.06	7.39	296	0.14
22800-009	UPRT20A	009	5	12/12/2012 07:41:39	22.61	8.17	7.45	283	0.14
22800-010	UPRT20B	010	5	12/12/2012 07:41:48	22.56	8.19	7.46	309	0.15
22800-011	UPRT20C	011	5	12/12/2012 07:41:59	22.60	8.19	7.50	306	0.15
22800-012	UPRT20D	012	5	12/12/2012 07:42:09	22.59	8.17	7.53	296	0.14
22800-013	UPRT20E	013	5	12/12/2012 07:42:19	22.58	8.17	7.54	301	0.15
22800-014	UPRT20F	014	5	12/12/2012 07:42:27	22.62	8.22	7.55	311	0.15
22800-015	UPRT20G	015	5	12/12/2012 07:42:39	22.76	8.17	7.53	302	0.15
22800-016	UPRT21A	016	5	12/12/2012 07:42:49	22.86	8.06	7.54	309	0.15
22800-017	UPRT21B	017	5	12/12/2012 07:42:58	22.90	8.04	7.51	307	0.15
22800-018	UPRT21C	018	5	12/12/2012 07:43:10	22.95	7.77	7.45	299	0.14
22800-019	UPRT21D	019	5	12/12/2012 07:43:20	23.03	7.82	7.48	312	0.15
22800-020	UPRT21E	020	5	12/12/2012 07:43:28	23.03	7.94	7.55	305	0.15

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-021	UPRT21F	021	5	12/12/2012 07:43:45	22.89	8.09	7.56	298	0.14
22800-022	UPRT21G	022	5	12/12/2012 07:43:58	23.05	8.01	7.56	298	0.14
22800-023	UPRT22A	023	5	12/12/2012 07:44:09	23.12	8.11	7.59	297	0.14
22800-024	UPRT22B	024	5	12/12/2012 07:44:18	23.15	8.12	7.62	302	0.15
22800-000	Lab Control	000	6	12/13/2012 13:30:39	23.22	7.80	7.50	296	0.14
22800-001	UPRT18I	001	6	12/13/2012 13:30:56	23.38	7.78	7.48	299	0.14
22800-002	UPRT18H	002	6	12/13/2012 13:31:05	23.44	7.69	7.45	296	0.14
22800-003	UPRT18J	003	6	12/13/2012 13:31:14	23.53	7.56	7.45	305	0.15
22800-004	UPRT18K	004	6	12/13/2012 13:31:22	23.54	7.72	7.48	301	0.15
22800-005	UPRT19J	005	6	12/13/2012 13:31:31	23.48	7.88	7.53	307	0.15
22800-006	UPRT19K	006	6	12/13/2012 13:31:39	23.46	7.89	7.53	296	0.14
22800-007	UPRT19L	007	6	12/13/2012 13:31:47	23.49	7.86	7.52	295	0.14
22800-008	UPRT19M	008	6	12/13/2012 13:31:56	23.48	7.87	7.54	294	0.14
22800-009	UPRT20A	009	6	12/13/2012 13:32:03	23.46	7.96	7.56	288	0.14
22800-010	UPRT20B	010	6	12/13/2012 13:32:11	23.43	8.01	7.55	304	0.15
22800-011	UPRT20C	011	6	12/13/2012 13:32:26	23.42	8.04	7.59	300	0.15
22800-012	UPRT20D	012	6	12/13/2012 13:32:47	23.25	8.12	7.51	295	0.14
22800-013	UPRT20E	013	6	12/13/2012 13:32:56	23.44	8.02	7.57	296	0.14
22800-014	UPRT20F	014	6	12/13/2012 13:33:04	23.51	8.04	7.59	307	0.15
22800-015	UPRT20G	015	6	12/13/2012 13:33:23	23.65	7.84	7.51	296	0.14
22800-016	UPRT21A	016	6	12/13/2012 13:33:32	23.69	7.77	7.51	307	0.15
22800-017	UPRT21B	017	6	12/13/2012 13:33:46	23.73	7.65	7.45	311	0.15
22800-018	UPRT21C	018	6	12/13/2012 13:34:05	23.64	7.57	7.45	296	0.14
22800-019	UPRT21D	019	6	12/13/2012 13:34:14	23.64	7.67	7.49	309	0.15
22800-020	UPRT21E	020	6	12/13/2012 13:34:22	23.68	7.79	7.56	305	0.15
22800-021	UPRT21F	021	6	12/13/2012 13:34:30	23.70	7.85	7.59	295	0.14
22800-022	UPRT21G	022	6	12/13/2012 13:34:43	23.76	7.92	7.61	296	0.14
22800-023	UPRT22A	023	6	12/13/2012 13:34:53	23.81	7.99	7.64	295	0.14
22800-024	UPRT22B	024	6	12/13/2012 13:35:03	23.86	8.04	7.68	297	0.14
22800-000	Lab Control	000	7	12/14/2012 08:43:22	22.57	7.81	7.37	292	0.14
22800-001	UPRT18I	001	7	12/14/2012 08:43:46	22.77	7.49	7.43	293	0.14
22800-002	UPRT18H	002	7	12/14/2012 08:43:55	22.88	7.56	7.38	291	0.14
22800-003	UPRT18J	003	7	12/14/2012 08:44:03	22.96	7.49	7.39	297	0.14
22800-004	UPRT18K	004	7	12/14/2012 08:44:12	22.97	7.73	7.47	293	0.14
22800-005	UPRT19J	005	7	12/14/2012 08:44:19	22.91	7.90	7.50	299	0.14
22800-006	UPRT19K	006	7	12/14/2012 08:44:27	22.88	7.96	7.53	292	0.14
22800-007	UPRT19L	007	7	12/14/2012 08:44:34	22.88	7.95	7.54	292	0.14
22800-008	UPRT19M	008	7	12/14/2012 08:44:41	22.88	7.95	7.55	290	0.14
22800-009	UPRT20A	009	7	12/14/2012 08:44:48	22.85	8.02	7.58	288	0.14
22800-010	UPRT20B	010	7	12/14/2012 08:44:57	22.81	8.10	7.58	302	0.15
22800-011	UPRT20C	011	7	12/14/2012 08:45:04	22.79	8.11	7.59	297	0.14
22800-012	UPRT20D	012	7	12/14/2012 08:45:16	22.44	8.31	7.54	295	0.14
22800-013	UPRT20E	013	7	12/14/2012 08:45:26	22.78	8.18	7.60	291	0.14
22800-014	UPRT20F	014	7	12/14/2012 08:45:33	22.88	8.17	7.62	298	0.14
22800-015	UPRT20G	015	7	12/14/2012 08:45:40	22.93	8.17	7.61	291	0.14
22800-016	UPRT21A	016	7	12/14/2012 08:45:47	23.02	8.09	7.58	300	0.14
22800-017	UPRT21B	017	7	12/14/2012 08:45:54	23.07	8.06	7.58	304	0.15
22800-018	UPRT21C	018	7	12/14/2012 08:46:01	23.10	7.89	7.55	293	0.14
22800-019	UPRT21D	019	7	12/14/2012 08:46:10	23.13	7.83	7.57	303	0.15
22800-020	UPRT21E	020	7	12/14/2012 08:46:18	23.13	7.91	7.62	301	0.15
22800-021	UPRT21F	021	7	12/14/2012 08:46:25	23.12	8.00	7.64	292	0.14
22800-022	UPRT21G	022	7	12/14/2012 08:46:35	23.17	8.01	7.65	295	0.14

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-023	UPRT22A	023	7	12/14/2012 08:46:50	23.29	8.04	7.70	293	0.14
22800-024	UPRT22B	024	7	12/14/2012 08:46:57	23.31	7.99	7.72	294	0.14
22800-000	Lab Control	000	8	12/15/2012 08:32:13	23.58	7.61	7.77	301	0.15
22800-001	UPRT18I	001	8	12/15/2012 08:33:06	23.88	7.52	7.67	298	0.14
22800-002	UPRT18H	002	8	12/15/2012 08:33:26	23.88	7.30	7.59	298	0.14
22800-003	UPRT18J	003	8	12/15/2012 08:33:46	23.99	7.48	7.67	300	0.15
22800-004	UPRT18K	004	8	12/15/2012 08:34:16	23.90	7.75	7.80	295	0.14
22800-005	UPRT19J	005	8	12/15/2012 08:34:40	23.75	7.71	7.78	287	0.14
22800-006	UPRT19K	006	8	12/15/2012 08:34:54	23.83	7.81	7.73	295	0.14
22800-007	UPRT19L	007	8	12/15/2012 08:35:32	23.90	7.67	7.79	295	0.14
22800-008	UPRT19M	008	8	12/15/2012 08:36:16	23.91	7.86	7.86	293	0.14
22800-009	UPRT20A	009	8	12/15/2012 08:36:33	23.85	7.91	7.82	294	0.14
22800-010	UPRT20B	010	8	12/15/2012 08:36:55	23.70	7.93	7.84	306	0.15
22800-011	UPRT20C	011	8	12/15/2012 08:37:28	23.71	7.92	7.83	300	0.14
22800-012	UPRT20D	012	8	12/15/2012 08:37:42	23.52	7.96	7.82	299	0.14
22800-013	UPRT20E	013	8	12/15/2012 08:39:05	23.69	7.96	7.86	297	0.14
22800-014	UPRT20F	014	8	12/15/2012 08:39:24	23.77	7.91	7.80	299	0.14
22800-015	UPRT20G	015	8	12/15/2012 08:39:50	23.98	7.68	7.78	298	0.14
22800-016	UPRT21A	016	8	12/15/2012 08:40:10	24.07	7.89	7.84	306	0.15
22800-017	UPRT21B	017	8	12/15/2012 08:40:58	24.00	7.14	7.68	309	0.15
22800-018	UPRT21C	018	8	12/15/2012 08:41:16	24.02	7.48	7.73	307	0.15
22800-019	UPRT21D	019	8	12/15/2012 08:41:29	24.08	7.61	7.79	306	0.15
22800-020	UPRT21E	020	8	12/15/2012 08:41:47	24.04	7.92	7.87	303	0.15
22800-021	UPRT21F	021	8	12/15/2012 08:41:59	24.01	7.94	7.84	296	0.14
22800-022	UPRT21G	022	8	12/15/2012 08:42:20	24.12	7.70	7.78	296	0.14
22800-023	UPRT22A	023	8	12/15/2012 08:42:37	24.20	7.82	7.82	297	0.14
22800-024	UPRT22B	024	8	12/15/2012 08:43:01	24.29	8.15	7.99	315	0.15
22800-000	Lab Control	000	9	12/16/2012 07:35:08	22.37	7.76	7.41	306	0.15
22800-001	UPRT18I	001	9	12/16/2012 07:35:26	22.49	7.73	7.42	302	0.15
22800-002	UPRT18H	002	9	12/16/2012 07:35:40	22.61	7.70	7.40	300	0.15
22800-003	UPRT18J	003	9	12/16/2012 07:35:51	22.76	7.72	7.44	304	0.15
22800-004	UPRT18K	004	9	12/16/2012 07:36:01	22.76	8.00	7.51	301	0.15
22800-005	UPRT19J	005	9	12/16/2012 07:36:21	22.67	8.19	7.60	310	0.15
22800-006	UPRT19K	006	9	12/16/2012 07:36:34	22.81	8.13	7.59	296	0.14
22800-007	UPRT19L	007	9	12/16/2012 07:36:43	22.86	8.08	7.57	299	0.14
22800-008	UPRT19M	008	9	12/16/2012 07:36:53	22.91	8.16	7.60	297	0.14
22800-009	UPRT20A	009	9	12/16/2012 07:37:04	22.90	8.21	7.62	300	0.14
22800-010	UPRT20B	010	9	12/16/2012 07:37:14	22.86	8.22	7.63	307	0.15
22800-011	UPRT20C	011	9	12/16/2012 07:37:25	22.82	8.25	7.66	305	0.15
22800-012	UPRT20D	012	9	12/16/2012 07:37:36	22.77	8.26	7.67	303	0.15
22800-013	UPRT20E	013	9	12/16/2012 07:37:48	22.91	8.23	7.66	298	0.14
22800-014	UPRT20F	014	9	12/16/2012 07:37:58	22.90	8.26	7.62	304	0.15
22800-015	UPRT20G	015	9	12/16/2012 07:38:07	22.94	8.33	7.59	302	0.15
22800-016	UPRT21A	016	9	12/16/2012 07:38:15	23.02	8.26	7.61	308	0.15
22800-017	UPRT21B	017	9	12/16/2012 07:38:23	23.02	8.23	7.59	314	0.15
22800-018	UPRT21C	018	9	12/16/2012 07:38:31	23.02	7.99	7.55	309	0.15
22800-019	UPRT21D	019	9	12/16/2012 07:38:43	23.11	7.96	7.59	310	0.15
22800-020	UPRT21E	020	9	12/16/2012 07:38:55	23.22	8.15	7.66	303	0.15
22800-021	UPRT21F	021	9	12/16/2012 07:39:06	23.21	8.20	7.66	302	0.15
22800-022	UPRT21G	022	9	12/16/2012 07:39:16	23.22	8.17	7.64	302	0.15
22800-023	UPRT22A	023	9	12/16/2012 07:39:27	23.29	8.18	7.67	299	0.14
22800-024	UPRT22B	024	9	12/16/2012 07:39:37	23.34	8.34	7.76	306	0.15

LabID	Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
22800-000	Lab Control	000	10	12/17/2012 08:49:57	23.02	8.33	7.05	351	0.17
22800-001	UPRT18I	001	10	12/17/2012 08:50:27	23.22	7.87	7.24	297	0.14
22800-002	UPRT18H	002	10	12/17/2012 08:50:38	23.24	7.93	7.26	296	0.14
22800-003	UPRT18J	003	10	12/17/2012 08:50:55	23.17	8.15	7.39	308	0.15
22800-004	UPRT18K	004	10	12/17/2012 08:51:05	23.08	8.29	7.48	303	0.15
22800-005	UPRT19J	005	10	12/17/2012 08:51:16	23.06	8.36	7.53	318	0.15
22800-006	UPRT19K	006	10	12/17/2012 08:51:27	23.16	8.30	7.55	297	0.14
22800-007	UPRT19L	007	10	12/17/2012 08:51:43	23.32	8.33	7.54	287	0.14
22800-008	UPRT19M	008	10	12/17/2012 08:51:52	23.33	8.29	7.57	294	0.14
22800-009	UPRT20A	009	10	12/17/2012 08:52:02	23.25	8.31	7.60	300	0.14
22800-010	UPRT20B	010	10	12/17/2012 08:52:12	23.23	8.27	7.58	303	0.15
22800-011	UPRT20C	011	10	12/17/2012 08:52:26	23.28	8.22	7.66	308	0.15
22800-012	UPRT20D	012	10	12/17/2012 08:52:35	23.26	8.23	7.68	302	0.15
22800-013	UPRT20E	013	10	12/17/2012 08:52:43	23.29	8.24	7.68	296	0.14
22800-014	UPRT20F	014	10	12/17/2012 08:52:52	23.26	8.26	7.64	306	0.15
22800-015	UPRT20G	015	10	12/17/2012 08:53:02	23.30	8.23	7.60	300	0.14
22800-016	UPRT21A	016	10	12/17/2012 08:53:28	23.32	8.19	7.68	307	0.15
22800-017	UPRT21B	017	10	12/17/2012 08:53:39	23.29	8.09	7.58	307	0.15
22800-018	UPRT21C	018	10	12/17/2012 08:53:52	23.30	7.86	7.55	312	0.15
22800-019	UPRT21D	019	10	12/17/2012 08:54:01	23.37	7.96	7.61	308	0.15
22800-020	UPRT21E	020	10	12/17/2012 08:54:10	23.46	8.10	7.65	299	0.14
22800-021	UPRT21F	021	10	12/17/2012 08:54:20	23.49	8.20	7.65	300	0.14
22800-022	UPRT21G	022	10	12/17/2012 08:54:31	23.50	8.18	7.68	299	0.14
22800-023	UPRT22A	023	10	12/17/2012 08:54:39	23.54	8.23	7.72	293	0.14
22800-024	UPRT22B	024	10	12/17/2012 08:54:48	23.57	8.34	7.83	297	0.14

***Chironomus dilutus* 10 Day Sediment Assay
Survival Counts**

STUDY: 22802			PROJECT: Windward Environmental, LLC					
DATE: 12/17/12			CLIENT: Lower Passaic River Remedial Investigation					
Sample Code	Sample Number	Rep	Pos	Larvae	Pupae	Emerged	Total	Initials
22800-007	007	1	1	7	0		7 ✓	Dm
22800-015	015	1	2	6	0		6 ✓	
22800-016	016	1	3	9	0		9 ✓	
22800-014	014	1	4	6	0		6 ✓	
22800-009	009	1	5	109	01		10 ✓	
22800-018	018	1	6	7	0		7 ✓	
22800-013	013	1	7	86	X3		9 ✓	
22800-002	002	1	8	8	0	1 ✓	9 ✓	
22800-024	024	1	9	7	0	1 ✓	8 ✓	
22800-011	011	1	10	8	1		9 ✓	
22800-006	006	1	11	7	0	1 ✓	8 ✓	
22800-017	017	1	12	E3D ^{PC} 45	1	1 ✓	7 ✓	
22800-005	005	1	13	3	0		3 ✓	
22800-019	019	1	14	86	1		7 ✓	
22800-023	023	1	15	7	1		8 ✓	
22800-020	020	1	16	78	0		8 ✓	
22800-022	022	1	17	8	1		9 ✓	
22800-021	021	1	18	8	0		8 ✓	
22800-008	008	1	19	10	0		10 ✓	
22800-000	000	1	20	9	0		9 ✓	
22800-010	010	1	21	10	0		10 ✓	
22800-001	001	1	22	10	0		10 ✓	
22800-003	003	1	23	8	0		8 ✓	
22800-004	004	1	24	8	0		8 ✓	
22800-012	012	1	25	5	0		5 ✓	
22800-017	017	2	26	7	1		8 ✓	
22800-019	019	2	27	6	0	2 ✓	8 ✓	
22800-002	002	2	28	9	0		9 ✓	
22800-008	008	2	29	7	0	1 ✓	8 ✓	
22800-009	009	2	30	9	0		9 ✓	
22800-023	023	2	31	4	0		4 ✓	
22800-021	021	2	32	165	X2	1 ✓	8 ✓	
22800-006	006	2	33	8	0		8 ✓	
22800-022	022	2	34	4	2	2 ✓	8 ✓	
22800-020	020	2	35	7	0	3 ✓	10 ✓	
22800-007	007	2	36	X6	01	1 ✓	8 ✓	
22800-004	004	2	37	7	0	1 ✓	8 ✓	
22800-024	024	2	38	7	0	2 ✓	9 ✓	
22800-011	011	2	39	60	1	32 ✓	9 ✓	
22800-010	010	2	40	4	2	2 ✓	8 ✓	

***Chironomus dilutus* 10 Day Sediment Assay**
Survival Counts

STUDY: 22802			PROJECT: Windward Environmental, LLC					
DATE: 12/17/12			CLIENT: Lower Passaic River Remedial Investigation					
Sample Code	Sample Number	Rep	Pos	Larvae	Pupae	Emerged	Total	Initials
22800-005	005	2	41	0			0 ✓	RAM
22800-013	013	2	42	9 8	X 2		10 ✓	
22800-003	003	2	43	9 (casing found)		1 ✓	10 ✓	
22800-012	012	2	44	9		2 ✓	11 ✓	
22800-001	001	2	45	5	2	1 ✓	8 ✓	
22800-016	016	2	46	6 (casing found)	2	1 ✓	9 ✓	
22800-014	014	2	47	6		1 ✓	7 ✓	
22800-018	018	2	48	8	1		9 ✓	
22800-015	015	2	49	2 (casing found)	1	5 ✓	8 ✓	
22800-000	000	2	50	4 (casing found)	3	3 ✓	10 ✓	
22800-022	022	3	51	5 (2 casings found)		4 ✓	9 ✓	
22800-000	000	3	52	6		4 ✓	10 ✓	
22800-003	003	3	53	8	2		10 ✓	
22800-016	016	3	54	5 (casing found)	1	2 ✓	8 ✓	
22800-004	004	3	55	9			9 ✓	
22800-008	008	3	56	4		1 ✓	5 ✓	
22800-002	002	3	57	9	1		10 ✓	
22800-010	010	3	58	4		1 ✓	5 ✓	
22800-019	019	3	59	7		2 ✓	9 ✓	
22800-017	017	3	60	6	1	1 ✓	8 ✓	
22800-005	005	3	61	0 (casing found)			0 ✓	
22800-001	001	3	62	5	1		6 ✓	
22800-015	015	3	63	6 (casing found)	1	1 ✓	8 ✓	
22800-011	011	3	64	7	2	1 ✓	10 ✓	
22800-024	024	3	65	8 4	X 2	2 ✓	8 ✓	
22800-020	020	3	66	3 (2 casings found)	1	2 ✓	6 ✓	
22800-018	018	3	67	2 (2 casings found)	2	3 ✓	7 ✓	
22800-021	021	3	68	6	1	1 ✓	8 ✓	
22800-007	007	3	69	7			7 ✓	
22800-009	009	3	70	7 (2 casings found)			8 ✓	
22800-014	014	3	71	6			6 ✓	
22800-012	012	3	72	9			9 ✓	
22800-023	023	3	73	10		1 ✓	11 ✓	AM
22800-006	006	3	74	10			10 ✓	AM
22800-013	013	3	75	8			8 ✓	RAM
22800-006	006	4	76	7			2 ✓	
22800-001	001	4	77	10 9	1		10 ✓	
22800-009	009	4	78	4 5	1		6 ✓	
22800-011	011	4	79	7	2		9 ✓	
22800-004	004	4	80	8			8 ✓	

***Chironomus dilutus* 10 Day Sediment Assay
Survival Counts**

STUDY: 22802			PROJECT: Windward Environmental, LLC					
DATE: 12/17/12			CLIENT: Lower Passaic River Remedial Investigation					
Sample Code	Sample Number	Rep	Pos	Larvae	Pupae	Emerged	Total	Initials
22800-013	013	4	81	5			5 ✓	A
22800-024	024	4	82	6			6 ✓	
22800-007	007	4	83	7	2	1 ✓	10 ✓	
22800-014	014	4	84	6			6 ✓	
22800-017	017	4	85	9			9 ✓	
22800-012	012	4	86	9			9 ✓	
22800-008	008	4	87	9			9 ✓	
22800-019	019	4	88	6, 8, 9			9 ✓	
22800-003	003	4	89	10			10 ✓	
22800-002	002	4	90	3	10		10 ✓	
22800-022	022	4	91	3			3 ✓	
22800-010	010	4	92	10			10 ✓	
22800-023	023	4	93	8		1 ✓	9 ✓	
22800-000	000	4	94	8		3 ✓	11 ✓	
22800-005	005	4	95	0			0 ✓	
22800-021	021	4	96	7	1	2 ✓	10 ✓	
22800-018	018	4	97	7			7 ✓	
22800-020	020	4	98	8			8 ✓	
22800-015	015	4	99	5	1 Casing	4 ✓	9 ✓	
22800-016	016	4	100	5	1	2 ✓	8 ✓	
22800-014	014	5	101	8, 7			7 ✓	
22800-015	015	5	102	9			9 ✓	
22800-017	017	5	103	7	1	1	8 ✓	
22800-022	022	5	104	8	1		9 ✓	
22800-010	010	5	105	8			8 ✓	
22800-024	024	5	106	8			8 ✓	
22800-009	009	5	107	10			10 ✓	
22800-016	016	5	108	8			8 ✓	
22800-019	019	5	109	4	1 Casing	3	4 ✓	
22800-013	013	5	110	10			10 ✓	
22800-002	002	5	111	6	3		9 ✓	
22800-023	023	5	112	6		1 ✓	7 ✓	
22800-007	007	5	113	7			7 ✓	
22800-021	021	5	114	7	1		8 ✓	
22800-012	012	5	115	8	1		9 ✓	
22800-020	020	5	116	5	1, Casing	3 ✓	9 ✓	
22800-018	018	5	117	6			6 ✓	
22800-001	001	5	118	3	1 Casing		3 ✓	
22800-004	004	5	119	10		1	10 ✓	
22800-006	006	5	120	4	4	1 ✓	9 ✓	0

***Chironomus dilutus* 10 Day Sediment Assay**
Survival Counts

STUDY: 22802			PROJECT: Windward Environmental, LLC					
DATE: 12/17/12			CLIENT: Lower Passaic River Remedial Investigation					
Sample Code	Sample Number	Rep	Pos	Larvae	Pupae	Emerged	Total	Initials
22800-005	005	5	121	0			0 ✓	
22800-008	008	5	122	4 (casing found)	1	2 ✓	7 ✓	
22800-011	011	5	123	9 (casing found)			9 ✓	
22800-003	003	5	124	8	1		9 ✓	
22800-000	000	5	125	10			10 ✓	
22800-011	011	6	126	7 (E3 DR 6)	1	1 ✓	8 ✓	
22800-016	016	6	127	5	2	3 ✓	10 ✓	
22800-003	003	6	128	8	2		10 ✓	
22800-022	022	6	129	6	1	3 ✓	10 ✓	
22800-013	013	6	130	7	2		9 ✓	
22800-009	009	6	131	3	3		6 ✓	
22800-005	005	6	132	0	0		0 ✓	JTP
22800-014	014	6	133	2	0		2 ✓	
22800-021	021	6	134	6	1	2 ✓	9 ✓	
22800-001	001	6	135	7	0	1 ✓	8 ✓	
22800-018	018	6	136	7	0	1 ✓	8 ✓	
22800-008	008	6	137	6 (E3) 7 8	10	1 ✓	9 ✓	
22800-024	024	6	138	7	1		8 ✓	
22800-012	012	6	139	4	1	2 ✓	7 ✓	
22800-015	015	6	140	6	1	3 ✓	10 ✓	
22800-007	007	6	141	7	1		8 ✓	
22800-023	023	6	142	5	2	1 ✓	8 ✓	
22800-010	010	6	143	6	1	1 ✓	8 ✓	
22800-000	000	6	144	4	5	1 ✓	10 ✓	
22800-006	006	6	145	5	2	1 ✓	8 ✓	
22800-002	002	6	146	6	1	2 ✓	9 ✓	
22800-019	019	6	147	7	0	1 ✓	8 ✓	
22800-020	020	6	148	9	0	1 ✓	10 ✓	
22800-017	017	6	149	6	0		6 ✓	
22800-004	004	6	150	8	0		8 ✓	
22800-022	022	7	151	7	1		8 ✓	
22800-010	010	7	152	6	1	1 ✓	8 ✓	RAM
22800-012	012	7	153	4			4 ✓	
22800-013	013	7	154	6 (E3) 8 (DR 7)	1		9 ✓	
22800-020	020	7	155	7	1	1 ✓	9 ✓	
22800-011	011	7	156	9			9 ✓	
22800-024	024	7	157	8	2		10 ✓	
22800-021	021	7	158	7	3	1 ✓	11 ✓	
22800-023	023	7	159	2	2	1 ✓	5 ✓	
22800-002	002	7	160	8	2		10 ✓	

***Chironomus dilutus* 10 Day Sediment Assay**
Survival Counts

STUDY: 22802			PROJECT: Windward Environmental, LLC					
DATE: 12/17/12			CLIENT: Lower Passaic River Remedial Investigation					
Sample Code	Sample Number	Rep	Pos	Larvae	Pupae	Emerged	Total	Initials
22800-008	008	7	161	6	2		8 ✓	JTP
22800-014	014	7	162	5	0		5 ✓	
22800-017	017	7	163	4	2	3 ✓	9 ✓	
22800-015	015	7	164	8	0	1 ✓	9 ✓	↓
22800-003	003	7	165	5	1	1 ✓	7 ✓	DM
22800-019	019	7	166	4	0	2 ✓	6 ✓	
22800-006	006	7	167	7	0		7 ✓	
22800-004	004	7	168	9	0		9 ✓	
22800-016	016	7	169	8	0	1 ✓	9 ✓	
22800-018	018	7	170	5	0	2 ✓	7 ✓	
22800-000	000	7	171	7 6	2 3		9 ✓	
22800-007	007	7	172	5	1		6 ✓	
22800-005	005	7	173	0	0		0 ✓	
22800-009	009	7	174	5	0		5 ✓	
22800-001	001	7	175	5	0	1 ✓	6 ✓	
22800-012	012	8	176	10	0		10 ✓	
22800-000	000	8	177	5 6	2	2 ✓	10 ✓	
22800-009	009	8	178	7	1	1 ✓	9 ✓	
22800-002	002	8	179	8	1		9 ✓	
22800-010	010	8	180	7	0		7 ✓	
22800-013	013	8	181	5	1	2 ✓	8 ✓	
22800-023	023	8	182	4	0	10 casting ✓	5 ✓	
22800-006	006	8	183	7	0		7 ✓	
22800-017	017	8	184	7 6	1 0	1 ✓	8 ✓	
22800-003	003	8	185	5	1	1 ✓	7 ✓	
22800-011	011	8	186	9	0		9 ✓	
22800-001	001	8	187	6	0		6 ✓	
22800-019	019	8	188	6	0		6 ✓	↓
22800-020	020	8	189	3	2	2 ✓	7 ✓	JTP
22800-007	007	8	190	7	1	1 ✓	9 ✓	
22800-022	022	8	191	10	0		10 ✓	
22800-016	016	8	192	8	0	2 ✓	10 ✓	
22800-018	018	8	193	7 6	0	1 ✓	7 ✓	↓
22800-015	015	8	194	6	1	2 ✓	9 ✓	↓
22800-004	004	8	195	8		1 ✓	9 ✓	RAM
22800-005	005	8	196	0			0 ✓	1
22800-024	024	8	197	5		3 ✓	8 ✓	
22800-008	008	8	198	8			8 ✓	
22800-014	014	8	199	4			4 ✓	
22800-021	021	8	200	4	4	1 ✓	9 ✓	↓

***Chironomus dilutus* 10 Day Sediment Assay**
Emergence Counts

STUDY: 22802		PROJECT: Windward Environmental, LLC							
CLIENT: Lower Passaic River Remedial Investigation									
Sample Code	Sample Number	Rep	Pos	Day 08 12/15/12	Initials	Day 09 12/16/12	Initials	Day 10 12/17/12	Initials
22800-007	007	1	1		ND		An		Dm
22800-015	015	1	2						
22800-016	016	1	3						
22800-014	014	1	4						
22800-009	009	1	5						
22800-018	018	1	6						
22800-013	013	1	7				+E3pm		
22800-002	002	1	8						
22800-024	024	1	9			I			
22800-011	011	1	10						
22800-006	006	1	11						
22800-017	017	1	12						
22800-005	005	1	13						
22800-019	019	1	14						
22800-023	023	1	15						
22800-020	020	1	16						
22800-022	022	1	17						
22800-021	021	1	18						
22800-008	008	1	19						
22800-000	000	1	20						
22800-010	010	1	21						
22800-001	001	1	22						
22800-003	003	1	23						
22800-004	004	1	24						
22800-012	012	1	25						
22800-017	017	2	26						
22800-019	019	2	27				2		
22800-002	002	2	28						
22800-008	008	2	29			I			
22800-009	009	2	30						
22800-023	023	2	31						
22800-021	021	2	32			I			
22800-006	006	2	33						
22800-022	022	2	34			2			
22800-020	020	2	35			2		I	
22800-007	007	2	36						
22800-004	004	2	37						
22800-024	024	2	38			I		I	
22800-011	011	2	39						2
22800-010	010	2	40	I		I		V	

***Chironomus dilutus* 10 Day Sediment Assay**
Emergence Counts

STUDY: 22802		PROJECT: Windward Environmental, LLC							
		CLIENT: Lower Passaic River Remedial Investigation							
Sample Code	Sample Number	Rep	Pos	Day 08 12/15/12	Initials	Day 09 12/16/12	Initials	Day 10 12/17/12	Initials
22800-005	005	2	41		ND		An		Dr
22800-013	013	2	42						
22800-003	003	2	43					1	
22800-012	012	2	44					2	
22800-001	001	2	45			1			
22800-016	016	2	46					1	
22800-014	014	2	47					1	
22800-018	018	2	48						
22800-015	015	2	49	2		3			
22800-000	000	2	50			1		2	
22800-022	022	3	51			2		2	
22800-000	000	3	52					4	
22800-003	003	3	53						
22800-016	016	3	54			1		1	
22800-004	004	3	55						
22800-008	008	3	56	1					
22800-002	002	3	57						
22800-010	010	3	58					1	
22800-019	019	3	59					2	
22800-017	017	3	60					1	
22800-005	005	3	61						
22800-001	001	3	62						
22800-015	015	3	63					1	
22800-011	011	3	64			1			
22800-024	024	3	65			2			
22800-020	020	3	66	1				1	
22800-018	018	3	67	1				2	
22800-021	021	3	68					1	
22800-007	007	3	69						
22800-009	009	3	70						
22800-014	014	3	71						
22800-012	012	3	72						
22800-023	023	3	73	1					
22800-006	006	3	74						
22800-013	013	3	75						
22800-006	006	4	76						
22800-001	001	4	77						
22800-009	009	4	78						
22800-011	011	4	79						
22800-004	004	4	80			4			

***Chironomus dilutus* 10 Day Sediment Assay**
Emergence Counts

STUDY: 22802		PROJECT: Windward Environmental, LLC								
		CLIENT: Lower Passaic River Remedial Investigation								
Sample Code	Sample Number	Rep	Pos	Day 08 12/15/12	Initials	Day 09 12/16/12	Initials	Day 10 12/17/12	Initials	
22800-013	013	4	81		ND					Dm
22800-024	024	4	82							
22800-007	007	4	83			/				
22800-014	014	4	84							
22800-017	017	4	85							
22800-012	012	4	86							
22800-008	008	4	87							
22800-019	019	4	88							
22800-003	003	4	89							
22800-002	002	4	90							
22800-022	022	4	91							
22800-010	010	4	92							
22800-023	023	4	93							
22800-000	000	4	94			2				
22800-005	005	4	95							
22800-021	021	4	96			/				
22800-018	018	4	97							
22800-020	020	4	98							
22800-015	015	4	99			3				
22800-016	016	4	100							
22800-014	014	5	101							
22800-015	015	5	102							
22800-017	017	5	103							
22800-022	022	5	104							
22800-010	010	5	105							
22800-024	024	5	106							
22800-009	009	5	107							
22800-016	016	5	108							
22800-019	019	5	109							
22800-013	013	5	110							
22800-002	002	5	111							
22800-023	023	5	112		V	/				
22800-007	007	5	113		Jm					
22800-021	021	5	114							
22800-012	012	5	115							
22800-020	020	5	116							3
22800-018	018	5	117							
22800-001	001	5	118							
22800-004	004	5	119							
22800-006	006	5	120		↓					↓

***Chironomus dilutus* 10 Day Sediment Assay**
Emergence Counts

STUDY: 22802			PROJECT: Windward Environmental, LLC						
CLIENT: Lower Passaic River Remedial Investigation									
Sample Code	Sample Number	Rep	Pos	Day 08 12/15/12	Initials	Day 09 12/16/12	Initials	Day 10 12/17/12	Initials
22800-005	005	5	121		Jm		An		Dm
22800-008	008	5	122	1		1			
22800-011	011	5	123						
22800-003	003	5	124						
22800-000	000	5	125						
22800-011	011	6	126					1	
22800-016	016	6	127			3			
22800-003	003	6	128						
22800-022	022	6	129	1		1		1	
22800-013	013	6	130						
22800-009	009	6	131						
22800-005	005	6	132						
22800-014	014	6	133						
22800-021	021	6	134	1		1			
22800-001	001	6	135			1			
22800-018	018	6	136					1	
22800-008	008	6	137					1	
22800-024	024	6	138						
22800-012	012	6	139	1		1			
22800-015	015	6	140	1				2	
22800-007	007	6	141						
22800-023	023	6	142			1			
22800-010	010	6	143					1	
22800-000	000	6	144					1	
22800-006	006	6	145					1	
22800-002	002	6	146			2			
22800-019	019	6	147			1			
22800-020	020	6	148			1			
22800-017	017	6	149						
22800-004	004	6	150						
22800-022	022	7	151						
22800-010	010	7	152					1	
22800-012	012	7	153						
22800-013	013	7	154						
22800-020	020	7	155					1	
22800-011	011	7	156						
22800-024	024	7	157						
22800-021	021	7	158			1			
22800-023	023	7	159			1			
22800-002	002	7	160			1			

***Chironomus dilutus* 10 Day Sediment Assay**
Emergence Counts

STUDY: 22802		PROJECT: Windward Environmental, LLC							
CLIENT: Lower Passaic River Remedial Investigation									
Sample Code	Sample Number	Rep	Pos	Day 08 12/15/12	Initials	Day 09 12/16/12	Initials	Day 10 12/17/12	Initials
22800-008	008	7	161		JM		An		Dm
22800-014	014	7	162						
22800-017	017	7	163					3	
22800-015	015	7	164					1	
22800-003	003	7	165					1	
22800-019	019	7	166					2	
22800-006	006	7	167						
22800-004	004	7	168						
22800-016	016	7	169					1	
22800-018	018	7	170	X 63		2			
22800-000	000	7	171						
22800-007	007	7	172						
22800-005	005	7	173						
22800-009	009	7	174						
22800-001	001	7	175					1	
22800-012	012	8	176						
22800-000	000	8	177	| 63		1			
22800-009	009	8	178	X 63		1			
22800-002	002	8	179						
22800-010	010	8	180						
22800-013	013	8	181	X 63		1		1	
22800-023	023	8	182					1	
22800-006	006	8	183						
22800-017	017	8	184	X 63		1			
22800-003	003	8	185					1	
22800-011	011	8	186						
22800-001	001	8	187						
22800-019	019	8	188						
22800-020	020	8	189					2	
22800-007	007	8	190	X 63		1			
22800-022	022	8	191						
22800-016	016	8	192	X 63		1		1	
22800-018	018	8	193	X 63		1			
22800-015	015	8	194	|				1	
22800-004	004	8	195	|					
22800-005	005	8	196						
22800-024	024	8	197	X 63		2		1	
22800-008	008	8	198						
22800-014	014	8	199						
22800-021	021	8	200						

***Chironomus dilutus* Sediment Evaluation**

Study: 22802

Client: Windward Environmental, LLC

**Project: Lower Passaic River
Remedial Investigation**

	REP	TARE WEIGHT (mg)	C. dilutus + FOIL (mg)	NET WEIGHT (mg)	# C. dilutus	MEAN DRY WEIGHT PER Individual (mg)
START ORGANISMS	A	209.73	213.33	3.6	10	0.36
	B	209.1	213.62	4.52	10	0.452
	C	209.24	212.452	3.28	10	0.328
	D	210	214.64	4.64	10	0.464
RECORDED BY:	DM	ND				ND
DATE:	12/11/12	01/10/13				01/10/13

(E)
ND 1/10/13

(Average = 0.401 RAM)

STUDY: 22802

CLIENT: Windward Environmental, LLC

PROJECT: Lower Passaic River Remedial Investigation

ASSAY: 10 Day Chironomus Survival and Growth

SPECIES: Chironomus dilutus

TASK: Dry Weight Data - AccuSeries Balance Output File

BALANCE: AccuSeries Model 225D

Serial #: 17008376

01/02/13 CS;

01/03/13 LB;

Recorded by: 01/07/13 JTP 12/17/12 AM 01/10/13 JTP

Duplicates

Sample	Rep	Pos	Total Wt (mg)	Tare Wt (mg)	Ash Wt (mg)	Total Wt (mg)	Tare Wt (mg)	Ash Wt (mg)
22800-007	1	001		209.68				
22800-015	1	002	214.71	207.64	208.47			
22800-016	1	003	224.3	208.57	211.69			
22800-014	1	004		209.64				
22800-009	1	005	224.1	208	210.56			
22800-018	1	006	220.21	208.76	210.55			
22800-013	1	007	218.85	208.22	210.22			
22800-002	1	008		209.43				
22800-024	1	009	219.95	209.46	211.14			
22800-011	1	010	226.27	210.95	213.17			
22800-006	1	011	223.37	208.87	211.38			
22800-017	1	012	220.85	209.38	210.76			
22800-005	1	013		210.04				
22800-019	1	014	221.43	208.41	210.2			
22800-023	1	015	221.4	208.95	210.84			
22800-020	1	016	224.42	209.05	211.22			
22800-022	1	017	220.75	207.42	208.74			
22800-021	1	018	227.69	210.2	212.53			
22800-008	1	019	225.63	208.85	211.66			
22800-000	1	020	225.5	209.51	210.69	225.5	209.51	210.7
22800-010	1	021	221.27	207.98	209.47			
22800-001	1	022	225.57	209.5	212.38			
22800-003	1	023	225.59	209.38	214.4			
22800-004	1	024	223	208.55	211.06			
22800-012	1	025	217.88	209.28	210.5			
22800-017	2	026	220.11	208.7	210.35			
22800-019	2	027	222.62	208.35	209.77			
22800-002	2	028	231.42	209.57	213.36			
22800-008	2	029	223.11	208.57	210.13			
22800-009	2	030	229.72	208.28	211.95			
22800-023	2	031	221.07	207.89	209.58			
22800-021	2	032	223.76	209.91	211.71			
22800-006	2	033	225.87	208.76	212.25			
22800-022	2	034	215.69	208.05	208.71			
22800-020	2	035	222.05	207.55	209.43			
22800-007	2	036	223.9	208.75	211.17			
22800-004	2	037	221.26	208.62	210.91			
22800-024	2	038	223.56	208.61	210.81			
22800-011	2	039		208.79				
22800-010	2	040	217.67	208.06	209.81	217.66	208.06	209.75
22800-005	2	041		210.44				
22800-013	2	042	223.88	207.61	209.77			

01/02/13 CS; 01/03/13 LB;							Duplicates		
Recorded by:	Sample	Rep	Pos	12/17/12 AM	01/10/13 JTP		Total Wt (mg)	Tare Wt (mg)	Ash Wt (mg)
	22800-003	2	043	226.9	207.54	212.4			
	22800-012	2	044	222.85	205.56	208.83			
	22800-001	2	045	220.81	209.21	211.5			
	22800-016	2	046	225.82	207.99	211.52			
	22800-014	2	047	224.44	209.79	211.96			
	22800-018	2	048		210.5				
	22800-015	2	049		209.9				
	22800-000	2	050	217.52	207.77	208.56			
	22800-022	3	051		208.01				
	22800-000	3	052	225.97	207.49	211.15			
	22800-003	3	053	229.57	210.88	215.43			
	22800-016	3	054	224.36	209.62	212.56			
	22800-004	3	055		207.49				
	22800-008	3	056		208.3				
	22800-002	3	057		207.45				
	22800-010	3	058	217.39	209.21	210.79	217.4		
	22800-019	3	059		208.22				
	22800-017	3	060		207.2		207.2		
	22800-005	3	061		208.5				
	22800-001	3	062		208.99				
	22800-015	3	063	223.02	209.33	211.18		211.19	
	22800-011	3	064		209.08				
	22800-024	3	065	217.45	208.68	209.71			
	22800-020	3	066	213.28	208.64	209.36			
	22800-018	3	067	213.96	208.58	209.32			
	22800-021	3	068	224.97	208.78	211.1			
	22800-007	3	069	224.91	209.37	212.49			
	22800-009	3	070	221.65	208.52	210.83			
	22800-014	3	071	214.53	208.08	209.09			
	22800-012	3	072	222.3	208.77	211.02			
	22800-023	3	073	225.24	208	211.51			
	22800-006	3	074	228.58	210.53	214.27			
	22800-013	3	075	224.71	209.81	212.39			
	22800-006	4	076	215.16	209.52	211.13			
	22800-001	4	077	223.34	207.94	211.04			
	22800-009	4	078	220.7	208.54	211.12			
	22800-011	4	079	225.09	209.24	211.81			
	22800-004	4	080	223.95	210.1	213.18	223.97	210.1	213.19
	22800-013	4	081	221.58	209.6	212.21			
	22800-024	4	082	223.56	209.61	211.41			
	22800-007	4	083	224.22	208.62	212.95			
	22800-014	4	084	214.82	207.83	208.59			
	22800-017	4	085	228.51	209.49	212.63			
	22800-012	4	086	223.94	208.59	211.7			
	22800-008	4	087	226.29	210.55	212.95			
	22800-019	4	088	227.74	210.14	213.08			
	22800-003	4	089	229.85	211.28	216.22			
	22800-002	4	090	226.18	208.58	212.85			
	22800-022	4	091	217.25	209.19	210.13			
	22800-010	4	092	236.17	212.91	217.73			
	22800-023	4	093	222.79	208.91	210.89			

01/02/13 CS; 01/03/13 LB;								
Recorded by:			01/07/13 JTP	12/17/12 AM	01/10/13 JTP	Duplicates		
Sample	Rep	Pos	Total Wt (mg)	Tare Wt (mg)	Ash Wt (mg)	Total Wt (mg)	Tare Wt (mg)	Ash Wt (mg)
22800-000	4	094	223.77	208.12	210.01			
22800-005	4	095		208.85				
22800-021	4	096	225.96	207.68	210.65			
22800-018	4	097	224.49	208.16	210.65			
22800-020	4	098	224.69	209.96	212.11			
22800-015	4	099	221.44	208.94	211.02			
22800-016	4	100	221.22	209.22	211.75	221.22	209.22	211.74
22800-014	5	101	216.4	209.03	209.91			
22800-015	5	102	226.55	207.1	210.87			
22800-017	5	103	229.61	211.14	213.92			
22800-022	5	104	223.16	209.86	211.32			
22800-010	5	105	231.03	210.68	213.72			
22800-024	5	106	225.4	208.62	211.16			
22800-009	5	107	233.43	210.58	214.82			
22800-016	5	108	221.8	209.4	211.32			
22800-019	5	109	221.15	208.45	210.78			
22800-013	5	110	227.06	208.57	211.39			
22800-002	5	111	222.54	209.65	211.58			
22800-023	5	112	221.19	208.74	211.45			
22800-007	5	113	225.66	208.86	215.15			
22800-021	5	114	225.12	207.6	210.73			
22800-012	5	115	223.1	209.71	211.98			
22800-020	5	116	217.94	207.99	209.36			
22800-018	5	117	221.12	208.73	210.54			
22800-001	5	118	215.02	208.15	208.97			
22800-004	5	119	230.46	210.76	214.77			
22800-006	5	120	214.53	206.15	208.12	214.53	206.15	208.13
22800-005	5	121		210.52				
22800-008	5	122	221.91	210.28	212.43			
22800-011	5	123	232.39	210.05	212.23			
22800-003	5	124	225.75	209.13	212.7			
22800-000	5	125	229.24	208.72	211.49			
22800-011	6	126	217.19	205	208.81			
22800-016	6	127	219.19	209.36	210.69			
22800-003	6	128	226.88	209.52	211.3			
22800-022	6	129	222.85	209.35	210.92			
22800-013	6	130	222.37	205.73	208.6			
22800-009	6	131	218.47	207.73	209.44			
22800-005	6	132		208.77				
22800-014	6	133	208.86	206.8	207.06			
22800-021	6	134	228.43	208.07	210.29			
22800-001	6	135	225.99	207.88	210.68			
22800-018	6	136	227	208.05	210.2			
22800-008	6	137	224.47	208.84	210.66			
22800-024	6	138	224.83	209	212.77			
22800-012	6	139	221.29	209.31	211.04			
22800-015	6	140	221.79	208.12	210.63	221.8	208.12	
22800-007	6	141	222.46	208.25	210.51			
22800-023	6	142	221.58	210.61	211.69			
22800-010	6	143	226.93	207.79	210.42			
22800-000	6	144	216.05	208.12	208.8			

01/02/13 CS; 01/03/13 LB;								
Recorded by:			01/07/13 JTP	12/17/12 AM	01/10/13 JTP	Duplicates		
Sample	Rep	Pos	Total Wt (mg)	Tare Wt (mg)	Ash Wt (mg)	Total Wt (mg)	Tare Wt (mg)	Ash Wt (mg)
22800-006	6	145	220.59	209.69	211.48			
22800-002	6	146	221.51	208.09	210.56			
22800-019	6	147	223.94	209.57	211.51			
22800-020	6	148	222.11	206.11	207.6			
22800-017	6	149	228.92	209.02	212.55			
22800-004	6	150	223.87	209.22	211.49			
22800-022	7	151	227.15	209.9	214.66			
22800-010	7	152	225.7	210.01	211.91			
22800-012	7	153	216.85	208.73	209.96			
22800-013	7	154	225.82	210.23	212.63			
22800-020	7	155	222.7	207.59	209.86			
22800-011	7	156	229.43	210.07	213.36			
22800-024	7	157	224.07	208.61	210.94			
22800-021	7	158	224.34	207.35	210.56			
22800-023	7	159	214.7	209	209.85			
22800-002	7	160	222.18	208.96	211.73	222.18	208.96	211.73
22800-008	7	161	218.62	207.05	208.47			
22800-014	7	162	218.54	210.7	211.82			
22800-017	7	163	224.19	210.07	211.79			
22800-015	7	164	229.52	209.77	213.44			
22800-003	7	165	218.47	209.95	211.66			
22800-019	7	166	220.54	210.23	211.67			
22800-006	7	167	223.89	209.55	212.63			
22800-004	7	168	223.17	207.91	210.56			
22800-016	7	169	224.63	208.26	214.78			
22800-018	7	170	221.85	208.42	210.63			
22800-000	7	171	219.91	208.14	209.18			
22800-007	7	172	217.76	209.03	210.36			
22800-005	7	173		209.71				
22800-009	7	174	219.47	207.72	209.71			
22800-001	7	175	220.47	210.11	212			
22800-012	8	176	222.12	206.31	209.33			
22800-000	8	177	217.45	207.43	208.11			
22800-009	8	178	222.53	209.06	211.78			
22800-002	8	179	218	208.29	210			
22800-010	8	180	222.62	207.38	210.33	222.61	207.38	210.34
22800-013	8	181	216.58	209.3	210.14			
22800-023	8	182	219.98	208.59	210.11			
22800-006	8	183	224.3	210.27	212.78			
22800-017	8	184	225.39	209.02	211			
22800-003	8	185	217.7	209.42	211.32			
22800-011	8	186	225.09	207.93	210.27			
22800-001	8	187	221.05	210.12	211.88			
22800-019	8	188	224.02	208.16	210.56			
22800-020	8	189	214.65	209.22	209.85			
22800-007	8	190	220	208.52	210.78			
22800-022	8	191	221.89	207.42	210.76			
22800-016	8	192	223.14	209.7	212.76			
22800-018	8	193	221.12	209.34	211.45			
22800-015	8	194	220.6	208.97	210.93			
22800-004	8	195	223.11	208.81	211.68			

01/02/13 CS;
01/03/13 LB;

Recorded by: 01/07/13 JTP 12/17/12 AM 01/10/13 JTP

Duplicates

Sample	Rep	Pos	Total Wt (mg)	Tare Wt (mg)	Ash Wt (mg)	Total Wt (mg)	Tare Wt (mg)	Ash Wt (mg)
22800-005	8	196	213.35	209.68	210.35			
22800-024	8	197	221.46	208.98	211.91			
22800-008	8	198	222.76	209.94	212.26			
22800-014	8	199	216.39	210.52	211.38			
22800-021	8	200	218.37	208.73	210.34	218.37	208.71	

CETIS Summary Report
Report Date:

15 Jan-13 11:10 (p 1 of 6)

Test Code:

22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test						EnviroSystems, Inc.
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse
22800-001	16-4551-8127	12 Nov-12 10:13	17 Nov-12 13:05	25d 2h		
22800-002	12-7608-5227	12 Nov-12 12:17	17 Nov-12 13:05	25d		
22800-003	11-7795-6459	12 Nov-12 13:21	17 Nov-12 13:05	24d 23h		
22800-004	08-4834-2931	12 Nov-12 14:37	17 Nov-12 13:05	24d 21h		
22800-005	11-3775-7426	13 Nov-12 08:20	17 Nov-12 13:05	24d 4h		
22800-006	15-2324-2159	13 Nov-12 09:46	17 Nov-12 13:05	24d 2h		
22800-007	04-8067-7422	13 Nov-12 10:55	17 Nov-12 13:05	24d 1h		
22800-008	11-9606-6366	13 Nov-12 11:59	17 Nov-12 13:05	24d 0h		
22800-009	08-6088-6776	13 Nov-12 13:30	17 Nov-12 13:05	23d 22h		
22800-010	00-6504-4240	13 Nov-12 14:41	17 Nov-12 13:05	23d 21h		
22800-011	06-7617-7021	14 Nov-12 08:15	17 Nov-12 13:05	23d 4h		
22800-012	08-8087-7260	14 Nov-12 09:14	17 Nov-12 13:05	23d 3h		
22800-013	13-4098-0624	14 Nov-12 11:12	17 Nov-12 13:05	23d 1h		
22800-014	12-2328-2385	14 Nov-12 11:49	17 Nov-12 13:05	23d 0h		
22800-015	07-6377-7783	14 Nov-12 12:52	17 Nov-12 13:05	22d 23h		
22800-016	12-7040-7515	14 Nov-12 13:52	17 Nov-12 13:05	22d 22h		
22800-017	03-2230-4522	15 Nov-12 08:19	17 Nov-12 13:05	22d 4h		
22800-018	09-1843-1107	15 Nov-12 09:17	17 Nov-12 13:05	22d 3h		
22800-019	07-8610-6905	15 Nov-12 10:08	17 Nov-12 13:05	22d 2h		
22800-020	07-2784-0432	15 Nov-12 10:52	17 Nov-12 13:05	22d 1h		
22800-021	09-5811-7655	15 Nov-12 11:29	17 Nov-12 13:05	22d 1h		
22800-022	08-0539-1503	15 Nov-12 12:25	17 Nov-12 13:05	22d		
22800-023	04-1666-1117	16 Nov-12 08:06	17 Nov-12 13:05	21d 4h		
22800-024	09-8169-6091	16 Nov-12 09:09	17 Nov-12 13:05	21d 3h		
Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude	
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000			
22800-001	Freshwater Sediment	Lower Passaic River Ecological R	UPRT18I; 22800-001			
22800-002	Freshwater Sediment	Lower Passaic River Ecological R	UPRT18H; 22800-002			
22800-003	Freshwater Sediment	Lower Passaic River Ecological R	UPRT18J; 22800-003			
22800-004	Freshwater Sediment	Lower Passaic River Ecological R	UPRT18K; 22800-004			
22800-005	Freshwater Sediment	Lower Passaic River Ecological R	UPRT19J; 22800-005			
22800-006	Freshwater Sediment	Lower Passaic River Ecological R	UPRT19K; 22800-006			
22800-007	Freshwater Sediment	Lower Passaic River Ecological R	UPRT19L; 22800-007			
22800-008	Freshwater Sediment	Lower Passaic River Ecological R	UPRT19M; 22800-008			
22800-009	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20A; 22800-009			
22800-010	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20B; 22800-010			
22800-011	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20C; 22800-011			
22800-012	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20D; 22800-012			
22800-013	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20E; 22800-013			
22800-014	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20F; 22800-014			
22800-015	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20G; 22800-015			
22800-016	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21A; 22800-016			
22800-017	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21B; 22800-017			
22800-018	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21C; 22800-018			
22800-019	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21D; 22800-019			
22800-020	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21E; 22800-020			
22800-021	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21F; 22800-021			
22800-022	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21G; 22800-022			

CETIS Summary Report

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Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test					EnviroSystems, Inc.
Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
22800-023	Freshwater Sediment	Lower Passaic River Ecological R	UPRT22A; 22800-023		
22800-024	Freshwater Sediment	Lower Passaic River Ecological R	UPRT22B; 22800-024		

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Test Code:

22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test								EnviroSystems, Inc.		
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	0.725	1.775	0.1265	0.3579	29.77%	0.0%
22800-001	7	1.054	0.7601	1.348	0.605	1.531	0.1202	0.3181	30.17%	12.3%
22800-002	6	1.196	0.8351	1.557	0.8	1.806	0.1403	0.3437	28.74%	0.52%
22800-003	8	1.191	0.8971	1.485	0.638	1.558	0.1243	0.3516	29.52%	0.92%
22800-004	7	1.217	1.054	1.379	1.035	1.569	0.06637	0.1756	14.43%	-1.22%
22800-006	8	1.028	0.7313	1.325	0.403	1.431	0.1255	0.355	34.53%	14.47%
22800-007	7	1.079	0.9013	1.256	0.74	1.273	0.07243	0.1916	17.77%	10.28%
22800-008	7	1.203	1.026	1.38	0.948	1.397	0.07226	0.1912	15.89%	-0.1%
22800-009	8	1.248	0.932	1.564	0.903	1.861	0.1337	0.3782	30.3%	-3.84%
22800-010	8	1.307	0.9467	1.668	0.66	1.844	0.1526	0.4316	33.01%	-8.77%
22800-011	6	1.43	1.023	1.837	0.838	2.016	0.1584	0.388	27.13%	-18.97%
22800-012	8	1.059	0.8663	1.251	0.689	1.279	0.08137	0.2301	21.74%	11.93%
22800-013	8	1.169	0.9025	1.435	0.644	1.567	0.1126	0.3184	27.25%	2.78%
22800-014	7	0.631	0.336	0.926	0.18	1.248	0.1206	0.319	50.56%	47.51%
22800-015	7	1.158	0.8407	1.476	0.624	1.608	0.1298	0.3435	29.66%	3.63%
22800-016	8	1.092	0.9355	1.249	0.85	1.43	0.06634	0.1876	17.18%	9.13%
22800-017	7	1.351	1.094	1.608	0.976	1.637	0.105	0.2778	20.56%	-12.4%
22800-018	7	1.092	0.7416	1.441	0.464	1.68	0.143	0.3784	34.66%	9.2%
22800-019	7	1.198	1.016	1.38	0.887	1.466	0.07426	0.1965	16.4%	0.33%
22800-020	8	1.038	0.6963	1.38	0.392	1.451	0.1446	0.4089	39.39%	13.64%
22800-021	8	1.368	1.121	1.616	0.803	1.814	0.1045	0.2957	21.6%	-13.84%
22800-022	7	1.05	0.8289	1.271	0.698	1.249	0.09036	0.2391	22.77%	12.65%
22800-023	8	1.01	0.8128	1.207	0.485	1.248	0.08329	0.2356	23.33%	16.0%
22800-024	8	1.13	0.9373	1.323	0.774	1.424	0.08165	0.2309	20.43%	5.97%
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.557	2.47	0.1107	0.3132	16.7%	0.0%
22800-001	7	1.711	1.406	2.015	1.319	2.187	0.1243	0.3288	19.22%	8.82%
22800-002	6	1.55	1.138	1.961	1	2.007	0.1602	0.3924	25.32%	17.4%
22800-003	8	1.545	1.349	1.74	1.276	1.948	0.08277	0.2341	15.16%	17.66%
22800-004	7	1.466	1.393	1.54	1.346	1.569	0.0301	0.07963	5.43%	21.84%
22800-006	8	1.693	1.549	1.836	1.431	2.015	0.0608	0.172	10.16%	9.78%
22800-007	7	1.645	1.404	1.885	1.317	2.122	0.09812	0.2596	15.79%	12.34%
22800-008	7	1.691	1.361	2.02	1.313	2.37	0.1347	0.3564	21.08%	9.89%
22800-009	8	1.912	1.506	2.319	1.504	3.01	0.1719	0.4863	25.43%	-1.94%
22800-010	8	1.951	1.559	2.343	1.18	2.752	0.1659	0.4693	24.05%	-4.0%
22800-011	6	1.767	1.467	2.068	1.397	2.24	0.1168	0.2861	16.19%	5.8%
22800-012	8	1.575	1.218	1.932	1.253	2.563	0.1511	0.4274	27.13%	16.04%
22800-013	8	1.636	1.447	1.825	1.288	1.967	0.07984	0.2258	13.8%	12.8%
22800-014	7	1.207	0.8156	1.598	0.9	2.08	0.1599	0.4231	35.06%	35.66%
22800-015	7	1.76	1.43	2.09	1.04	2.084	0.1348	0.3568	20.27%	6.17%
22800-016	8	1.697	1.302	2.092	1.231	2.383	0.1671	0.4726	27.85%	9.53%
22800-017	7	2.235	1.702	2.768	1.394	3.1	0.2179	0.5764	25.79%	-19.13%
22800-018	7	1.957	1.598	2.315	1.38	2.4	0.1464	0.3874	19.8%	-4.3%
22800-019	7	2.067	1.763	2.372	1.629	2.592	0.1244	0.3292	15.93%	-10.2%
22800-020	8	1.637	1.5	1.774	1.307	1.834	0.05796	0.1639	10.01%	12.75%
22800-021	8	2.232	1.928	2.537	1.895	3.023	0.1289	0.3646	16.33%	-19.0%
22800-022	7	1.712	1.339	2.085	1.113	2.373	0.1525	0.4035	23.57%	8.73%
22800-023	8	1.967	1.499	2.435	1.373	2.873	0.1978	0.5595	28.45%	-4.85%
22800-024	8	1.762	1.563	1.96	1.259	2.025	0.08392	0.2374	13.47%	6.09%

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Test Code:

22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test										EnviroSystems, Inc.
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
22800-000	8	0.975	0.9363	1	0.9	1	0.01637	0.04629	4.75%	0.0%
22800-001	8	0.7125	0.5155	0.9095	0.3	1	0.08332	0.2357	33.08%	26.92%
22800-002	8	0.9375	0.8942	0.9808	0.9	1	0.0183	0.05175	5.52%	3.85%
22800-003	8	0.8875	0.7741	1	0.7	1	0.04795	0.1356	15.28%	8.97%
22800-004	8	0.8625	0.8003	0.9247	0.8	1	0.02631	0.0744	8.63%	11.54%
22800-005	8	0.0375	0	0.1262	0	0.3	0.0375	0.1061	282.8%	96.15%
22800-006	8	0.7375	0.538	0.937	0.2	1	0.08438	0.2387	32.36%	24.36%
22800-007	8	0.775	0.6678	0.8822	0.6	1	0.04532	0.1282	16.54%	20.51%
22800-008	8	0.8	0.6736	0.9264	0.5	1	0.05345	0.1512	18.9%	17.95%
22800-009	8	0.7875	0.6237	0.9513	0.5	1	0.06928	0.1959	24.88%	19.23%
22800-010	8	0.8	0.6659	0.9341	0.5	1	0.05669	0.1604	20.04%	17.95%
22800-011	8	0.9	0.8553	0.9447	0.8	1	0.0189	0.05345	5.94%	7.69%
22800-012	8	0.7875	0.5956	0.9794	0.4	1	0.08115	0.2295	29.15%	19.23%
22800-013	8	0.85	0.7159	0.9841	0.5	1	0.05669	0.1604	18.87%	12.82%
22800-014	8	0.5375	0.3966	0.6784	0.2	0.7	0.05957	0.1685	31.35%	44.87%
22800-015	8	0.85	0.7501	0.9499	0.6	1	0.04226	0.1195	14.06%	12.82%
22800-016	8	0.8875	0.8177	0.9573	0.8	1	0.0295	0.08345	9.4%	8.97%
22800-017	8	0.7875	0.7046	0.8704	0.6	0.9	0.03504	0.0991	12.58%	19.23%
22800-018	8	0.725	0.6509	0.7991	0.6	0.9	0.03134	0.08864	12.23%	25.64%
22800-019	8	0.7125	0.5681	0.8569	0.4	0.9	0.06105	0.1727	24.24%	26.92%
22800-020	8	0.8375	0.7198	0.9552	0.6	1	0.04978	0.1408	16.81%	14.1%
22800-021	8	0.875	0.8009	0.9491	0.8	1	0.03134	0.08864	10.13%	10.26%
22800-022	8	0.825	0.6367	1	0.3	1	0.07962	0.2252	27.3%	15.38%
22800-023	8	0.7	0.5213	0.8787	0.4	1	0.07559	0.2138	30.54%	28.21%
22800-024	8	0.8125	0.7184	0.9066	0.6	1	0.03981	0.1126	13.86%	16.67%

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Test Code:

22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test								EnviroSystems, Inc.
Mean AF Biomass-mg Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934
22800-001	1.319	0.931		1.23	0.605	1.531	0.847	0.917
22800-002		1.806		1.333	1.096	1.095	1.045	0.8
22800-003	1.119	1.45	1.414	1.363	1.305	1.558	0.681	0.638
22800-004	1.194	1.035		1.077	1.569	1.238	1.261	1.143
22800-005								
22800-006	1.199	1.362	1.431	0.403	0.641	0.911	1.126	1.152
22800-007		1.273	1.242	1.127	1.051	1.195	0.74	0.922
22800-008	1.397	1.298		1.334	0.948	1.381	1.015	1.05
22800-009	1.354	1.777	1.082	0.958	1.861	0.903	0.976	1.075
22800-010	1.18	0.786	0.66	1.844	1.731	1.651	1.379	1.229
22800-011	1.31			1.328	2.016	0.838	1.607	1.482
22800-012	0.738	1.275	1.128	1.224	1.112	1.025	0.689	1.279
22800-013	0.863	1.411	1.232	0.937	1.567	1.377	1.319	0.644
22800-014		1.248	0.544	0.623	0.649	0.18	0.672	0.501
22800-015	0.624		1.184	1.042	1.568	1.116	1.608	0.967
22800-016	1.261	1.43	1.18	0.947	1.048	0.85	0.985	1.038
22800-017	1.009	0.976		1.588	1.569	1.637	1.24	1.439
22800-018	0.966		0.464	1.384	1.058	1.68	1.122	0.967
22800-019	1.123	1.285		1.466	1.037	1.243	0.887	1.346
22800-020	1.32	1.262	0.392	1.258	0.858	1.451	1.284	0.48
22800-021	1.516	1.205	1.387	1.531	1.439	1.814	1.253	0.803
22800-022	1.201	0.698		0.712	1.184	1.193	1.249	1.113
22800-023	1.056	1.149	1.248	1.19	0.974	0.989	0.485	0.987
22800-024	0.881	1.275	0.774	1.215	1.424	1.206	1.313	0.955
Mean AF Weight-mg Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557
22800-001	1.319	1.862		1.367	2.017	2.187	1.694	1.528
22800-002		2.007		1.333	1.827	1.825	1.306	1
22800-003	1.399	1.611	1.768	1.363	1.631	1.948	1.362	1.276
22800-004	1.493	1.479		1.346	1.569	1.547	1.401	1.429
22800-005								
22800-006	1.713	1.702	1.431	2.015	1.603	1.822	1.609	1.646
22800-007		2.122	1.774	1.61	1.501	1.707	1.48	1.317
22800-008	1.397	1.854		1.482	2.37	1.726	1.692	1.313
22800-009	1.504	1.974	1.546	1.916	1.861	3.01	1.952	1.536
22800-010	1.18	1.965	1.65	1.844	2.164	2.752	2.298	1.756
22800-011	1.638			1.897	2.24	1.397	1.786	1.647
22800-012	1.476	1.558	1.253	1.36	1.39	2.563	1.722	1.279
22800-013	1.438	1.764	1.54	1.874	1.567	1.967	1.649	1.288
22800-014		2.08	0.9067	1.038	0.9271	0.9	1.344	1.252
22800-015	1.04		1.973	2.084	1.742	1.86	2.01	1.612
22800-016	1.401	2.383	2.36	1.894	1.31	1.7	1.231	1.298
22800-017	2.018	1.394		1.764	2.241	2.728	3.1	2.398
22800-018	1.38		2.32	1.977	1.763	2.4	2.244	1.612
22800-019	1.872	2.142		1.629	2.592	1.776	2.217	2.243
22800-020	1.65	1.803	1.307	1.573	1.716	1.612	1.834	1.6
22800-021	1.895	2.41	2.312	2.187	2.056	3.023	1.969	2.007
22800-022	1.501	1.745		2.373	1.48	1.988	1.784	1.113
22800-023	1.509	2.873	1.373	1.487	1.623	1.978	2.425	2.467
22800-024	1.259	1.821	1.935	2.025	1.78	1.723	1.641	1.91

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Test Code:

22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test								EnviroSystems, Inc.
Proportion Survived Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
22800-000	0.9	1	1	1	1	1	0.9	1
22800-001	1	0.8	0.6	1	0.3	0.8	0.6	0.6
22800-002	0.9	0.9	1	1	0.9	0.9	1	0.9
22800-003	0.8	1	1	1	0.9	1	0.7	0.7
22800-004	0.8	0.8	0.9	0.8	1	0.8	0.9	0.9
22800-005	0.3	0	0	0	0	0	0	0
22800-006	0.8	0.8	1	0.2	0.9	0.8	0.7	0.7
22800-007	0.7	0.8	0.7	1	0.7	0.8	0.6	0.9
22800-008	1	0.8	0.5	0.9	0.7	0.9	0.8	0.8
22800-009	1	0.9	0.8	0.6	1	0.6	0.5	0.9
22800-010	1	0.8	0.5	1	0.8	0.8	0.8	0.7
22800-011	0.9	0.9	1	0.9	0.9	0.8	0.9	0.9
22800-012	0.5	1	0.9	0.9	0.9	0.7	0.4	1
22800-013	0.9	1	0.8	0.5	1	0.9	0.9	0.8
22800-014	0.6	0.7	0.6	0.6	0.7	0.2	0.5	0.4
22800-015	0.6	0.8	0.8	0.9	0.9	1	0.9	0.9
22800-016	0.9	0.9	0.8	0.8	0.8	1	0.9	1
22800-017	0.7	0.8	0.8	0.9	0.8	0.6	0.9	0.8
22800-018	0.7	0.9	0.7	0.7	0.6	0.8	0.7	0.7
22800-019	0.7	0.8	0.9	0.9	0.4	0.8	0.6	0.6
22800-020	0.8	1	0.6	0.8	0.9	1	0.9	0.7
22800-021	0.8	0.8	0.8	1	0.8	0.9	1	0.9
22800-022	0.9	0.8	0.9	0.3	0.9	1	0.8	1
22800-023	0.8	0.4	1	0.9	0.7	0.8	0.5	0.5
22800-024	0.8	0.9	0.8	0.6	0.8	0.8	1	0.8

**CETIS Analytical Reports
Survival Comparisons**

**in support of the Ecological Risk Assessment for
Lower Passaic River Remedial Investigation
Purchase Order Number 2012-0042**

CETIS Analytical Report

Report Date: 15 Jan-13 12:06 (p 1 of 1)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.
Analysis ID:	08-6750-3308	Endpoint:	Proportion Survived			CETIS Version:	CETISv1.8.6
Analyzed:	15 Jan-13 12:04	Analysis:	Parametric-Two Sample			Official Results:	Yes
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project	
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse	
22800-024	09-8169-6091	16 Nov-12 09:09	17 Nov-12 13:05	21d 3h			
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000				
22800-024	Freshwater Sediment	Lower Passaic River Ecological R	UPRT22B; 22800-024				
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result	
Angular (Corrected)	NA	C > T	NA	NA	6.56%		
Equal Variance t Two-Sample Test							
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value
22800-000		22800-024	4.003	1.761	0.104	14	0.0007
					CDF		Significant Effect
Auxiliary Tests							
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)	
Extreme Value	Grubbs Extreme Value		2.42	2.586	0.1112	No Outliers Detected	
ANOVA Table							
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)	
Between	0.2243806	0.2243806	1	16.02	0.0013	Significant Effect	
Error	0.1960788	0.01400563	14				
Total	0.4204594		15				
Distributional Tests							
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)	
Variances	Variance Ratio F		3.842	8.885	0.0966	Equal Variances	
Distribution	Shapiro-Wilk W Normality		0.9085	0.8408	0.1099	Normal Distribution	
Proportion Survived Summary							
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max
22800-000	8	0.975	0.9363	1	1	0.9	1
22800-024	8	0.8125	0.7184	0.9066	0.8	0.6	1
						0.01637	4.75%
						0.03981	13.86%
							0.0%
							16.67%
Angular (Corrected) Transformed Summary							
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419
22800-024	8	1.135	1.011	1.26	1.107	0.8861	1.412
						0.02689	5.54%
						0.05271	13.13%
							0.0%
							17.26%
Proportion Survived Detail							
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7
22800-000	0.9	1	1	1	1	1	0.9
22800-024	0.8	0.9	0.8	0.6	0.8	0.8	1
							0.8
Angular (Corrected) Transformed Detail							
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249
22800-024	1.107	1.249	1.107	0.8861	1.107	1.107	1.412
							1.412
							1.107

CETIS Analytical Report

Report Date: 15 Jan-13 11:15 (p 1 of 53)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 10-5545-5480 Analyzed: 15 Jan-13 11:06		Endpoint: Proportion Survived Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-023	04-1666-1117	16 Nov-12 08:06	17 Nov-12 13:05	21d 4h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-023	Freshwater Sediment	Lower Passaic River Ecological R		UPRT22A; 22800-023						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	11.0%					
Unequal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-023	3.802	1.86	0.174	8	0.0026	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.229	2.586	0.2426	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.5069998		0.5069998		1	14.46	0.0019	Significant Effect		
Error	0.4909222		0.03506587		14					
Total	0.9979219				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		11.12	8.885	0.0051	Unequal Variances				
Distribution	Shapiro-Wilk W Normality		0.936	0.8408	0.3025	Normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637	4.75%	0.0%
22800-023	8	0.7	0.5213	0.8787	0.75	0.4	1	0.07559	30.54%	28.21%
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689	5.54%	0.0%
22800-023	8	1.016	0.8041	1.228	1.049	0.6847	1.419	0.08968	24.96%	25.95%
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	1	1	1	1	1	0.9	1		
22800-023	0.8	0.4	1	0.9	0.7	0.8	0.5	0.5		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412		
22800-023	1.107	0.6847	1.419	1.249	0.9912	1.107	0.7854	0.7854		

CETIS Analytical Report

Report Date: 15 Jan-13 11:15 (p 2 of 53)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID:	05-8287-8666	Endpoint:	Proportion Survived				CETIS Version:	CETISv1.8.6		
Analyzed:	15 Jan-13 11:06	Analysis:	Parametric-Two Sample				Official Results:	Yes		
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project			
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse			
22800-022	08-0539-1503	15 Nov-12 12:25	17 Nov-12 13:05	22d						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-022	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21G; 22800-022						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	5.91%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type		
22800-000		22800-022	2.232	1.771	0.093	13	0.0219	CDF		
Significant Effect										
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	0.05122602		0.05122602		1	4.983	0.0438	Significant Effect		
Error	0.1336288		0.01027914		13					
Total	0.1848549				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		2.683	9.155	0.2226	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8813	0.8328	0.0496	Normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err		
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637		
22800-022	7	0.9	0.8245	0.9755	0.9	0.8	1	0.03086		
4.75% CV% 0.0% %Effect										
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err		
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689		
22800-022	7	1.255	1.14	1.37	1.249	1.107	1.412	0.04709		
5.54% CV% 0.0% %Effect										
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	1	1	1	1	1	0.9	1		
22800-022	0.9	0.8	0.9	Outlier	0.9	1	0.8	1		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412		
22800-022	1.249	1.107	1.249	1.249	1.412	1.107	1.412			

CETIS Analytical Report

Report Date: 15 Jan-13 11:15 (p 3 of 53)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 13-2996-3144 Analyzed: 15 Jan-13 11:06			Endpoint: Proportion Survived Analysis: Nonparametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-022	08-0539-1503	15 Nov-12 12:25	17 Nov-12 13:05	22d						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-022	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21G; 22800-022						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	10.9%					
Wilcoxon Rank Sum Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-022	49	NA	2	14	0.0268	Exact	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		3.136	2.586	0.0009	Outlier Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.1625156		0.1625156		1	4.27	0.0578	Non-Significant Effect		
Error	0.5328053		0.03805752		14					
Total	0.6953209				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		12.16	8.885	0.0039	Unequal Variances				
Distribution	Shapiro-Wilk W Normality		0.7698	0.8408	0.0011	Non-normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637	4.75%	0.0%
22800-022	8	0.825	0.6367	1	0.9	0.3	1	0.07962	27.3%	15.38%
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689	5.54%	0.0%
22800-022	8	1.171	0.9489	1.392	1.249	0.5796	1.412	0.09376	22.65%	14.69%
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	1	1	1	1	1	0.9	1		
22800-022	0.9	0.8	0.9	0.3	0.9	1	0.8	1		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412		
22800-022	1.249	1.107	1.249	0.5796	1.249	1.412	1.107	1.412		

CETIS Analytical Report

Report Date: 15 Jan-13 11:15 (p 4 of 53)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID:	19-4357-0198	Endpoint: Proportion Survived			CETIS Version: CETISv1.8.6					
Analyzed:	15 Jan-13 11:06	Analysis: Nonparametric-Two Sample			Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project			
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse			
22800-021	09-5811-7655	15 Nov-12 11:29	17 Nov-12 13:05	22d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-021	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21F; 22800-021						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	6.14%					
Wilcoxon Rank Sum Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type		
22800-000		22800-021	48	NA	2	14	0.0181	Exact		
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.877	2.586	0.7728	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.09294413		0.09294413		1	7.664	0.0151	Significant Effect		
Error	0.1697789		0.01212706		14					
Total	0.262723				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		3.193	8.885	0.1485	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.829	0.8408	0.0068	Non-normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err		
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637		
22800-021	8	0.875	0.8009	0.9491	0.85	0.8	1	0.03134		
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err		
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689		
22800-021	8	1.22	1.106	1.333	1.178	1.107	1.419	0.04805		
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	1	1	1	1	1	0.9	1		
22800-021	0.8	0.8	0.8	1	0.8	0.9	1	0.9		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412		
22800-021	1.107	1.107	1.107	1.412	1.107	1.249	1.419	1.249		

CETIS Analytical Report

Report Date: 15 Jan-13 11:15 (p 5 of 53)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.		
Analysis ID:	13-1795-6225	Endpoint:	Proportion Survived				CETIS Version: CETISv1.8.6		
Analyzed:	15 Jan-13 11:07	Analysis:	Parametric-Two Sample				Official Results: Yes		
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project			
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse			
22800-020	07-2784-0432	15 Nov-12 10:52	17 Nov-12 13:05	22d 1h					
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude		
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000						
22800-020	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21E; 22800-020						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result			
Angular (Corrected)	NA	C > T	NA	NA	7.92%				
Equal Variance t Two-Sample Test									
Sample Code	vs Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type		
22800-000	22800-020	2.715	1.761	0.127	14	0.0084	CDF		
Significant Effect									
Auxiliary Tests									
Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value	2.089	2.586	0.3995	No Outliers Detected				
ANOVA Table									
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)			
Between	0.1528773	0.1528773	1	7.373	0.0167	Significant Effect			
Error	0.2902724	0.02073374	14						
Total	0.4431496		15						
Distributional Tests									
Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F	6.168	8.885	0.0284	Equal Variances				
Distribution	Shapiro-Wilk W Normality	0.9299	0.8408	0.2432	Normal Distribution				
Proportion Survived Summary									
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max		
22800-000	8	0.975	0.9363	1	1	0.9	1		
22800-020	8	0.8375	0.7198	0.9552	0.85	0.6	1		
Std Err						0.01637	4.75%		
CV%							0.0%		
%Effect									
Angular (Corrected) Transformed Summary									
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max		
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419		
22800-020	8	1.177	1.019	1.335	1.178	0.8861	1.412		
Std Err						0.02689	5.54%		
CV%							0.0%		
%Effect									
Proportion Survived Detail									
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7		
22800-000	0.9	1	1	1	1	1	0.9		
22800-020	0.8	1	0.6	0.8	0.9	1	0.9		
Rep 8							0.7		
Angular (Corrected) Transformed Detail									
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7		
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249		
22800-020	1.107	1.412	0.8861	1.107	1.249	1.412	1.249		
Rep 8							0.9912		

CETIS Analytical Report

Report Date: 15 Jan-13 11:15 (p 6 of 53)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.		
Analysis ID:	01-5716-1420	Endpoint:	Proportion Survived				CETIS Version: CETISv1.8.6		
Analyzed:	15 Jan-13 11:07	Analysis:	Parametric-Two Sample				Official Results: Yes		
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project			
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse			
22800-019	07-8610-6905	15 Nov-12 10:08	17 Nov-12 13:05	22d 2h					
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude		
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000						
22800-019	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21D; 22800-019						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result			
Angular (Corrected)	NA	C > T	NA	NA	8.18%				
Equal Variance t Two-Sample Test									
Sample Code	vs Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type		
22800-000	22800-019	4.735	1.761	0.131	14	0.0002	CDF		
Auxiliary Tests									
Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value	2.334	2.586	0.1607	No Outliers Detected				
ANOVA Table									
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)			
Between	0.4960444	0.4960444	1	22.42	0.0003	Significant Effect			
Error	0.3097239	0.02212314	14						
Total	0.8057684		15						
Distributional Tests									
Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F	6.649	8.885	0.0231	Equal Variances				
Distribution	Shapiro-Wilk W Normality	0.9167	0.8408	0.1493	Normal Distribution				
Proportion Survived Summary									
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max		
22800-000	8	0.975	0.9363	1	1	0.9	1		
22800-019	8	0.7125	0.5681	0.8569	0.75	0.4	0.9		
Angular (Corrected) Transformed Summary									
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max		
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419		
22800-019	8	1.02	0.8561	1.184	1.049	0.6847	1.249		
Proportion Survived Detail									
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7		
22800-000	0.9	1	1	1	1	1	0.9		
22800-019	0.7	0.8	0.9	0.9	0.4	0.8	0.6		
Angular (Corrected) Transformed Detail									
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7		
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249		
22800-019	0.9912	1.107	1.249	1.249	0.6847	1.107	0.8861		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.				
Analysis ID:	15-7235-9065	Endpoint: Proportion Survived			CETIS Version: CETISv1.8.6						
Analyzed:	15 Jan-13 11:07	Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-018	09-1843-1107	15 Nov-12 09:17	17 Nov-12 13:05	22d 3h							
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000								
22800-018	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21C; 22800-018								
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	5.32%						
Equal Variance t Two-Sample Test											
Sample Code	vs Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)			
22800-000	22800-018	7.43	1.761	0.082	14	<0.0001	CDF	Significant Effect			
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :5%)						
Extreme Value	Grubbs Extreme Value	2.482	2.586	0.0835	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)					
Between	0.4828795	0.4828795	1	55.2	<0.0001	Significant Effect					
Error	0.1224653	0.008747521	14								
Total	0.6053448		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :1%)						
Variances	Variance Ratio F	2.024	8.885	0.3726	Equal Variances						
Distribution	Shapiro-Wilk W Normality	0.9008	0.8408	0.0828	Normal Distribution						
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637			
22800-018	8	0.725	0.6509	0.7991	0.7	0.6	0.9	0.03134			
CV% %Effect											
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689			
22800-018	8	1.025	0.9343	1.115	0.9912	0.8861	1.249	0.03826			
CV% %Effect											
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	1	1	1	1	1	0.9	1			
22800-018	0.7	0.9	0.7	0.7	0.6	0.8	0.7	0.7			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412			
22800-018	0.9912	1.249	0.9912	0.9912	0.8861	1.107	0.9912	0.9912			

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.		
Analysis ID:	13-2512-4065	Endpoint: Proportion Survived			CETIS Version: CETISv1.8.6				
Analyzed:	15 Jan-13 11:07	Analysis: Parametric-Two Sample			Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project			
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse			
22800-017	03-2230-4522	15 Nov-12 08:19	17 Nov-12 13:05	22d 4h					
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude		
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000						
22800-017	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21B; 22800-017						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result			
Angular (Corrected)	NA	C > T	NA	NA	5.68%				
Equal Variance t Two-Sample Test									
Sample Code	vs Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type		
22800-000	22800-017	5.382	1.761	0.089	14	<0.0001	CDF		
Auxiliary Tests									
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :5%)				
Extreme Value	Grubbs Extreme Value	2.198	2.586	0.2724	No Outliers Detected				
ANOVA Table									
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)			
Between	0.295315	0.295315	1	28.97	<0.0001	Significant Effect			
Error	0.1427361	0.01019543	14						
Total	0.438051		15						
Distributional Tests									
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F	2.525	8.885	0.2448	Equal Variances				
Distribution	Shapiro-Wilk W Normality	0.8857	0.8408	0.0476	Normal Distribution				
Proportion Survived Summary									
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max		
22800-000	8	0.975	0.9363	1	1	0.9	1		
22800-017	8	0.7875	0.7046	0.8704	0.8	0.6	0.9		
Angular (Corrected) Transformed Summary									
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max		
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419		
22800-017	8	1.1	0.9995	1.202	1.107	0.8861	1.249		
Proportion Survived Detail									
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7		
22800-000	0.9	1	1	1	1	1	0.9		
22800-017	0.7	0.8	0.8	0.9	0.8	0.6	0.9		
Angular (Corrected) Transformed Detail									
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7		
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249		
22800-017	0.9912	1.107	1.107	1.249	1.107	0.8861	1.249		
Rep 8							1.107		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.		
Analysis ID:	06-5778-1015	Endpoint:	Proportion Survived				CETIS Version: CETISv1.8.6		
Analyzed:	15 Jan-13 11:07	Analysis:	Parametric-Two Sample				Official Results: Yes		
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project			
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse			
22800-016	12-7040-7515	14 Nov-12 13:52	17 Nov-12 13:05	22d 22h					
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude		
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000						
22800-016	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21A; 22800-016						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result			
Angular (Corrected)	NA	C > T	NA	NA	5.86%				
Equal Variance t Two-Sample Test									
Sample Code	vs Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type		
22800-000	22800-016	2.597	1.761	0.092	14	0.0106	CDF		
Significant Effect									
Auxiliary Tests									
Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value	1.738	2.586	1.0000	No Outliers Detected				
ANOVA Table									
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)			
Between	0.07357929	0.07357929	1	6.743	0.0211	Significant Effect			
Error	0.1527736	0.0109124	14						
Total	0.2263529		15						
Distributional Tests									
Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F	2.773	8.885	0.2019	Equal Variances				
Distribution	Shapiro-Wilk W Normality	0.8442	0.8408	0.0112	Normal Distribution				
Proportion Survived Summary									
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max		
22800-000	8	0.975	0.9363	1	1	0.9	1		
22800-016	8	0.8875	0.8177	0.9573	0.9	0.8	1		
Std Err						0.01637	4.75%		
CV%							0.0%		
%Effect									
Angular (Corrected) Transformed Summary									
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max		
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419		
22800-016	8	1.237	1.131	1.342	1.249	1.107	1.412		
Std Err						0.02689	5.54%		
CV%							0.0%		
%Effect									
Proportion Survived Detail									
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7		
22800-000	0.9	1	1	1	1	1	0.9		
22800-016	0.9	0.9	0.8	0.8	0.8	1	0.9		
Rep 8							1		
Angular (Corrected) Transformed Detail									
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7		
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249		
22800-016	1.249	1.249	1.107	1.107	1.107	1.412	1.249		
Rep 8							1.412		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.				
Analysis ID: 19-4461-2411 Analyzed: 15 Jan-13 11:07			Endpoint: Proportion Survived Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project					
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse					
22800-015	07-6377-7783	14 Nov-12 12:52	17 Nov-12 13:05	22d 23h							
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000							
22800-015	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20G; 22800-015							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	6.77%						
Equal Variance t Two-Sample Test											
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)		
22800-000		22800-015	3	1.761	0.108	14	0.0048	CDF	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)					
Extreme Value	Grubbs Extreme Value		2.558	2.586	0.0577	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat		P-Value	Decision(α :5%)		
Between	0.134884		0.134884		1	9		0.0096	Significant Effect		
Error	0.2098126		0.01498662		14						
Total	0.3446966				15						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)					
Variances	Variance Ratio F		4.181	8.885	0.0786	Equal Variances					
Distribution	Shapiro-Wilk W Normality		0.8463	0.8408	0.0120	Normal Distribution					
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637	4.75%	0.0%	
22800-015	8	0.85	0.7501	0.9499	0.9	0.6	1	0.04226	14.06%	12.82%	
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689	5.54%	0.0%	
22800-015	8	1.189	1.059	1.319	1.249	0.8861	1.412	0.05499	13.09%	13.38%	
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	1	1	1	1	1	0.9	1			
22800-015	0.6	0.8	0.8	0.9	0.9	1	0.9	0.9			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412			
22800-015	0.8861	1.107	1.107	1.249	1.249	1.412	1.249	1.249			

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 04-2494-0080 Analyzed: 15 Jan-13 11:07		Endpoint: Proportion Survived Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-014	12-2328-2385	14 Nov-12 11:49	17 Nov-12 13:05	23d 0h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-014	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20F; 22800-014						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	5.47%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-014	10.39	1.771	0.085	13	<0.0001	CDF	Significant Effect	
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat		P-Value	Decision(α :5%)	
Between	0.9305457		0.9305457		1	108		<0.0001	Significant Effect	
Error	0.1120531		0.008619471		13					
Total	1.042599				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		2.062	9.155	0.3658	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8641	0.8328	0.0276	Normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637	4.75%	0.0%
22800-014	7	0.5857	0.4868	0.6846	0.6	0.4	0.7	0.04041	18.25%	39.93%
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689	5.54%	0.0%
22800-014	7	0.873	0.772	0.974	0.8861	0.6847	0.9912	0.04128	12.51%	36.38%
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	1	1	1	1	1	0.9	1		
22800-014	0.6	0.7	0.6	0.6	0.7	Outlier	0.5	0.4		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412		
22800-014	0.8861	0.9912	0.8861	0.8861	0.9912	0.7854	0.6847			

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Report Date: 15 Jan-13 11:15 (p 12 of 53)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.
Analysis ID:	06-7729-3273	Endpoint:	Proportion Survived			CETIS Version:	CETISv1.8.6
Analyzed:	15 Jan-13 11:07	Analysis:	Parametric-Two Sample			Official Results:	Yes
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project	
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse	
22800-014	12-2328-2385	14 Nov-12 11:49	17 Nov-12 13:05	23d 0h			
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000				
22800-014	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20F; 22800-014				
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result	
Angular (Corrected)	NA	C > T	NA	NA	7.48%		
Equal Variance t Two-Sample Test							
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value
22800-000		22800-014	8.099	1.761	0.12	14	<0.0001
					CDF		Significant Effect
Auxiliary Tests							
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)	
Extreme Value	Grubbs Extreme Value		2.727	2.586	0.0225	Outlier Detected	
ANOVA Table							
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)	
Between	1.21183	1.21183	1	65.6	<0.0001	Significant Effect	
Error	0.2586417	0.01847441	14				
Total	1.470472		15				
Distributional Tests							
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)	
Variances	Variance Ratio F		5.387	8.885	0.0410	Equal Variances	
Distribution	Shapiro-Wilk W Normality		0.8413	0.8408	0.0102	Normal Distribution	
Proportion Survived Summary							
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max
22800-000	8	0.975	0.9363	1	1	0.9	1
22800-014	8	0.5375	0.3966	0.6784	0.6	0.2	0.7
						Std Err	CV%
						0.01637	4.75%
						0.05957	31.35%
							44.87%
Angular (Corrected) Transformed Summary							
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419
22800-014	8	0.8218	0.6742	0.9694	0.8861	0.4636	0.9912
						Std Err	CV%
						0.02689	5.54%
						0.06241	21.48%
							40.11%
Proportion Survived Detail							
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7
22800-000	0.9	1	1	1	1	1	0.9
22800-014	0.6	0.7	0.6	0.6	0.7	0.2	0.5
						0.4	
Angular (Corrected) Transformed Detail							
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249
22800-014	0.8861	0.9912	0.8861	0.8861	0.9912	0.4636	0.7854
						0.6847	

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Report Date: 15 Jan-13 11:16 (p 13 of 53)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.				
Analysis ID: 16-1263-4247 Analyzed: 15 Jan-13 11:08			Endpoint: Proportion Survived Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project					
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse					
22800-013	13-4098-0624	14 Nov-12 11:12	17 Nov-12 13:05	23d 1h							
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000							
22800-013	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20E; 22800-013							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	5.91%						
Equal Variance t Two-Sample Test											
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)		
22800-000		22800-013	2.232	1.771	0.093	13	0.0219	CDF	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat		P-Value	Decision(α :5%)		
Between	0.05122602		0.05122602		1	4.983		0.0438	Significant Effect		
Error	0.1336288		0.01027914		13						
Total	0.1848549				14						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)					
Variances	Variance Ratio F		2.683	9.155	0.2226	Equal Variances					
Distribution	Shapiro-Wilk W Normality		0.8813	0.8328	0.0496	Normal Distribution					
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637	4.75%	0.0%	
22800-013	7	0.9	0.8245	0.9755	0.9	0.8	1	0.03086	9.07%	7.69%	
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689	5.54%	0.0%	
22800-013	7	1.255	1.14	1.37	1.249	1.107	1.412	0.04709	9.93%	8.54%	
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	1	1	1	1	1	0.9	1			
22800-013	0.9	1	0.8	Outlier	1	0.9	0.9	0.8			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412			
22800-013	1.249	1.412	1.107	1.412	1.249	1.249	1.107				

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 05-9855-6582 Analyzed: 15 Jan-13 11:08			Endpoint: Proportion Survived Analysis: Nonparametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-013	13-4098-0624	14 Nov-12 11:12	17 Nov-12 13:05	23d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-013	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20E; 22800-013						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	8.4%					
Wilcoxon Rank Sum Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-013	49	NA	2	14	0.0268	Exact	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.785	2.586	0.0157	Outlier Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.1236877		0.1236877		1	5.301	0.0372	Significant Effect		
Error	0.3266438		0.0233317		14					
Total	0.4503316				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		7.066	8.885	0.0194	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8325	0.8408	0.0076	Non-normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637	4.75%	0.0%
22800-013	8	0.85	0.7159	0.9841	0.9	0.5	1	0.05669	18.87%	12.82%
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689	5.54%	0.0%
22800-013	8	1.196	1.027	1.365	1.249	0.7854	1.412	0.07148	16.9%	12.81%
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	1	1	1	1	1	0.9	1		
22800-013	0.9	1	0.8	0.5	1	0.9	0.9	0.8		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412		
22800-013	1.249	1.412	1.107	0.7854	1.412	1.249	1.249	1.107		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.				
Analysis ID:	01-9804-5699	Endpoint:	Proportion Survived				CETIS Version:	CETISv1.8.6			
Analyzed:	15 Jan-13 11:08	Analysis:	Parametric-Two Sample				Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-012	08-8087-7260	14 Nov-12 09:14	17 Nov-12 13:05	23d 3h							
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000								
22800-012	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20D; 22800-012								
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	12.1%						
Unequal Variance t Two-Sample Test											
Sample Code	vs Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)			
22800-000	22800-012	2.375	1.86	0.19	8	0.0225	CDF	Significant Effect			
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)						
Extreme Value	Grubbs Extreme Value	2.259	2.586	0.2163	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)					
Between	0.2346784	0.2346784	1	5.639	0.0324	Significant Effect					
Error	0.5826353	0.04161681	14								
Total	0.8173137		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:1\%$)						
Variances	Variance Ratio F	13.39	8.885	0.0029	Unequal Variances						
Distribution	Shapiro-Wilk W Normality	0.9035	0.8408	0.0916	Normal Distribution						
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637			
22800-012	8	0.7875	0.5956	0.9794	0.9	0.4	1	0.08115			
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689			
22800-012	8	1.13	0.8973	1.363	1.249	0.6847	1.419	0.09839			
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	1	1	1	1	1	0.9	1			
22800-012	0.5	1	0.9	0.9	0.9	0.7	0.4	1			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412			
22800-012	0.7854	1.419	1.249	1.249	1.249	0.9912	0.6847	1.412			

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID:	16-6545-0490	Endpoint: Proportion Survived			CETIS Version: CETISv1.8.6					
Analyzed:	15 Jan-13 11:08	Analysis: Parametric-Two Sample			Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project			
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse			
22800-011	06-7617-7021	14 Nov-12 08:15	17 Nov-12 13:05	23d 4h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-011	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20C; 22800-011						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	4.63%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type		
22800-000		22800-011	3.055	1.761	0.069	14	0.0043	CDF		
Significant Effect										
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.104	2.586	0.3803	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.05810466		0.05810466		1	9.336	0.0086	Significant Effect		
Error	0.08713299		0.006223785		14					
Total	0.1452377				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.152	8.885	0.8569	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8518	0.8408	0.0145	Normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err		
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637		
22800-011	8	0.9	0.8553	0.9447	0.9	0.8	1	0.0189		
4.75% CV% 0.0% %Effect										
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err		
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689		
22800-011	8	1.252	1.183	1.32	1.249	1.107	1.412	0.02886		
5.54% CV% 0.0% %Effect										
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	1	1	1	1	1	0.9	1		
22800-011	0.9	0.9	1	0.9	0.9	0.8	0.9	0.9		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412		
22800-011	1.249	1.249	1.412	1.249	1.249	1.107	1.249	1.249		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.
Analysis ID:	05-8518-3683	Endpoint:	Proportion Survived			CETIS Version:	CETISv1.8.6
Analyzed:	15 Jan-13 11:08	Analysis:	Parametric-Two Sample			Official Results:	Yes
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project	
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse	
22800-010	00-6504-4240	13 Nov-12 14:41	17 Nov-12 13:05	23d 21h			
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000				
22800-010	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20B; 22800-010				
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result	
Angular (Corrected)	NA	C > T	NA	NA	8.57%		
Equal Variance t Two-Sample Test							
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value
22800-000		22800-010	3.127	1.761	0.137	14	0.0037
					CDF		Significant Effect
Auxiliary Tests							
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)	
Extreme Value	Grubbs Extreme Value		2.281	2.586	0.1986	No Outliers Detected	
ANOVA Table							
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)	
Between	0.2372795	0.2372795	1	9.78	0.0074	Significant Effect	
Error	0.3396626	0.02426161	14				
Total	0.5769421		15				
Distributional Tests							
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)	
Variances	Variance Ratio F		7.388	8.885	0.0171	Equal Variances	
Distribution	Shapiro-Wilk W Normality		0.89	0.8408	0.0557	Normal Distribution	
Proportion Survived Summary							
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max
22800-000	8	0.975	0.9363	1	1	0.9	1
22800-010	8	0.8	0.6659	0.9341	0.8	0.5	1
						0.01637	4.75%
						0.05669	20.04%
							17.95%
Angular (Corrected) Transformed Summary							
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419
22800-010	8	1.129	0.9558	1.301	1.107	0.7854	1.412
						0.02689	5.54%
						0.07309	18.32%
							17.75%
Proportion Survived Detail							
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7
22800-000	0.9	1	1	1	1	1	0.9
22800-010	1	0.8	0.5	1	0.8	0.8	0.8
						1	0.7
Angular (Corrected) Transformed Detail							
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249
22800-010	1.412	1.107	0.7854	1.412	1.107	1.107	1.412
						0.9912	

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.				
Analysis ID:	03-0386-3544	Endpoint:	Proportion Survived				CETIS Version:	CETISv1.8.6			
Analyzed:	15 Jan-13 11:08	Analysis:	Parametric-Two Sample				Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-009	08-6088-6776	13 Nov-12 13:30	17 Nov-12 13:05	23d 22h							
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000								
22800-009	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20A; 22800-009								
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	10.7%						
Unequal Variance t Two-Sample Test											
Sample Code	vs Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)			
22800-000	22800-009	2.729	1.86	0.17	8	0.0130	CDF	Significant Effect			
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :5%)						
Extreme Value	Grubbs Extreme Value	1.918	2.586	0.6863	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)					
Between	0.247708	0.247708	1	7.445	0.0163	Significant Effect					
Error	0.4658203	0.03327288	14								
Total	0.7135283		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :1%)						
Variances	Variance Ratio F	10.5	8.885	0.0061	Unequal Variances						
Distribution	Shapiro-Wilk W Normality	0.9349	0.8408	0.2911	Normal Distribution						
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637			
22800-009	8	0.7875	0.6237	0.9513	0.85	0.5	1	0.06928			
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689			
22800-009	8	1.123	0.9173	1.329	1.178	0.7854	1.412	0.08715			
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	1	1	1	1	1	0.9	1			
22800-009	1	0.9	0.8	0.6	1	0.6	0.5	0.9			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412			
22800-009	1.412	1.249	1.107	0.8861	1.412	0.8861	0.7854	1.249			

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.				
Analysis ID:	17-1853-1816	Endpoint:	Proportion Survived				CETIS Version:	CETISv1.8.6			
Analyzed:	15 Jan-13 11:08	Analysis:	Parametric-Two Sample				Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-008	11-9606-6366	13 Nov-12 11:59	17 Nov-12 13:05	24d 0h							
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000								
22800-008	Freshwater Sediment	Lower Passaic River Ecological R	UPRT19M; 22800-008								
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	7.88%						
Equal Variance t Two-Sample Test											
Sample Code	vs Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)			
22800-000	22800-008	3.434	1.761	0.126	14	0.0020	CDF	Significant Effect			
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :5%)						
Extreme Value	Grubbs Extreme Value	2.459	2.586	0.0931	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)					
Between	0.2424399	0.2424399	1	11.79	0.0040	Significant Effect					
Error	0.2878386	0.0205599	14								
Total	0.5302784		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :1%)						
Variances	Variance Ratio F	6.108	8.885	0.0292	Equal Variances						
Distribution	Shapiro-Wilk W Normality	0.92	0.8408	0.1689	Normal Distribution						
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637			
22800-008	8	0.8	0.6736	0.9264	0.8	0.5	1	0.05345			
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689			
22800-008	8	1.126	0.9689	1.283	1.107	0.7854	1.412	0.06646			
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	1	1	1	1	1	0.9	1			
22800-008	1	0.8	0.5	0.9	0.7	0.9	0.8	0.8			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412			
22800-008	1.412	1.107	0.7854	1.249	0.9912	1.249	1.107	1.107			

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Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.				
Analysis ID:	20-4510-8320	Endpoint: Proportion Survived			CETIS Version: CETISv1.8.6						
Analyzed:	15 Jan-13 11:08	Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-007	04-8067-7422	13 Nov-12 10:55	17 Nov-12 13:05	24d 1h							
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000							
22800-007	Freshwater Sediment	Lower Passaic River Ecological R		UPRT19L; 22800-007							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	7.23%						
Equal Variance t Two-Sample Test											
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type			
22800-000		22800-007	4.274	1.761	0.116	14	0.0004	CDF			
Decision(α :5%)											
Significant Effect											
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :5%)						
Extreme Value	Grubbs Extreme Value	2.526	2.586	0.0676	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)					
Between	0.3143648	0.3143648	1	18.27	0.0008	Significant Effect					
Error	0.2409393	0.01720995	14								
Total	0.5553041		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :1%)						
Variances	Variance Ratio F	4.95	8.885	0.0512	Equal Variances						
Distribution	Shapiro-Wilk W Normality	0.8967	0.8408	0.0711	Normal Distribution						
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637			
22800-007	8	0.775	0.6678	0.8822	0.75	0.6	1	0.04532			
CV% %Effect											
4.75% 0.0% 16.54% 20.51%											
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689			
22800-007	8	1.092	0.9504	1.233	1.049	0.8861	1.412	0.05983			
5.54% 0.0% 15.5% 20.43%											
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	1	1	1	1	1	0.9	1			
22800-007	0.7	0.8	0.7	1	0.7	0.8	0.6	0.9			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412			
22800-007	0.9912	1.107	0.9912	1.412	0.9912	1.107	0.8861	1.249			

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.								
Analysis ID:	12-1282-5570	Endpoint: Proportion Survived			CETIS Version: CETISv1.8.6										
Analyzed:	15 Jan-13 11:08	Analysis: Parametric-Two Sample			Official Results: Yes										
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project								
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse								
22800-006	15-2324-2159	13 Nov-12 09:46	17 Nov-12 13:05	24d 2h											
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude								
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000											
22800-006	Freshwater Sediment	Lower Passaic River Ecological R		UPRT19K; 22800-006											
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result									
Angular (Corrected)	NA	C > T	NA	NA	6.66%										
Equal Variance t Two-Sample Test															
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type							
22800-000		22800-006	3.916	1.771	0.106	13	0.0009	CDF							
Significant Effect															
ANOVA Table															
Source	Sum Squares		Mean Square		DF	F Stat		P-Value							
Between	0.2050744		0.2050744		1	15.33		0.0018							
Error	0.1738916		0.01337628		13										
Total	0.378966				14										
Decision(α:5%)															
Distributional Tests															
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)									
Variances	Variance Ratio F		3.843	9.155	0.1014	Equal Variances									
Distribution	Shapiro-Wilk W Normality		0.8925	0.8328	0.0731	Normal Distribution									
Proportion Survived Summary															
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err							
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637							
22800-006	7	0.8143	0.7154	0.9132	0.8	0.7	1	0.04041							
4.75% CV% 0.0% %Effect															
Proportion Survived Detail															
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8							
22800-000	0.9	1	1	1	1	1	0.9	1							
22800-006	0.8	0.8	1	Outlier	0.9	0.8	0.7	0.7							
Angular (Corrected) Transformed Summary															
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err							
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689							
22800-006	7	1.138	0.9999	1.276	1.107	0.9912	1.412	0.05636							
5.54% CV% 0.0% %Effect															
Angular (Corrected) Transformed Detail															
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8							
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412							
22800-006	1.107	1.107	1.412	1.249	1.107	0.9912	0.9912								

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Report Date: 15 Jan-13 11:16 (p 22 of 53)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 06-5579-5652 Analyzed: 15 Jan-13 11:08			Endpoint: Proportion Survived Analysis: Nonparametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-006	15-2324-2159	13 Nov-12 09:46	17 Nov-12 13:05	24d 2h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-006	Freshwater Sediment	Lower Passaic River Ecological R		UPRT19K; 22800-006						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	11.3%					
Wilcoxon Rank Sum Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-006	42	NA	2	14	0.0021	Exact	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		3.022	2.586	0.0026	Outlier Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.4061408		0.4061408		1	9.947	0.0070	Significant Effect		
Error	0.5716001		0.04082858		14					
Total	0.9777409				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		13.12	8.885	0.0031	Unequal Variances				
Distribution	Shapiro-Wilk W Normality		0.7829	0.8408	0.0016	Non-normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637	4.75%	0.0%
22800-006	8	0.7375	0.538	0.937	0.8	0.2	1	0.08438	32.36%	24.36%
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689	5.54%	0.0%
22800-006	8	1.054	0.8233	1.284	1.107	0.4636	1.412	0.09739	26.14%	23.22%
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	1	1	1	1	1	0.9	1		
22800-006	0.8	0.8	1	0.2	0.9	0.8	0.7	0.7		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412		
22800-006	1.107	1.107	1.412	0.4636	1.249	1.107	0.9912	0.9912		

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Report Date: 15 Jan-13 11:16 (p 23 of 53)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 07-2100-1840 Analyzed: 15 Jan-13 11:08			Endpoint: Proportion Survived Analysis: Nonparametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-005	11-3775-7426	13 Nov-12 08:20	17 Nov-12 13:05	24d 4h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-005	Freshwater Sediment	Lower Passaic River Ecological R		UPRT19J; 22800-005						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	3.7%					
Wilcoxon Rank Sum Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-005	28	NA	0	13	0.0002	Exact	Significant Effect	
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	5.496954		5.496954		1	1765	<0.0001	Significant Effect		
Error	0.0404944		0.003114954		13					
Total	5.537448				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Mod Levene Equality of Variance		1.819	9.33	0.2023	Equal Variances				
Variances	Levene Equality of Variance		18.12	9.074	0.0009	Unequal Variances				
Distribution	Shapiro-Wilk W Normality		0.6969	0.8328	0.0002	Non-normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637	4.75%	0.0%
22800-005	7	0	0	0	0	0	0			100.0%
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689	5.54%	0.0%
22800-005	7	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0	0.0%	88.43%
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	1	1	1	1	1	0.9	1		
22800-005	Outlier	0	0	0	0	0	0	0		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412		
22800-005	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 13-3311-6988 Analyzed: 15 Jan-13 11:08		Endpoint: Proportion Survived Analysis: Nonparametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-005	11-3775-7426	13 Nov-12 08:20	17 Nov-12 13:05	24d 4h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-005	Freshwater Sediment	Lower Passaic River Ecological R		UPTR19J; 22800-005						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	6.55%					
Wilcoxon Rank Sum Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-005	36	NA	0	14	<0.0001	Exact	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		3.226	2.586	0.0003	Outlier Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	5.389983		5.389983		1	386	<0.0001	Significant Effect		
Error	0.1954768		0.01396263		14					
Total	5.58546				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		3.827	8.885	0.0975	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.7153	0.8408	0.0003	Non-normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637	4.75%	0.0%
22800-005	8	0.0375	0	0.1262	0	0	0.3	0.0375	282.8%	96.15%
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689	5.54%	0.0%
22800-005	8	0.2114	0.08699	0.3358	0.1588	0.1588	0.5796	0.05261	70.39%	84.6%
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	1	1	1	1	1	0.9	1		
22800-005	0.3	0	0	0	0	0	0	0		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412		
22800-005	0.5796	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588	0.1588		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID:	03-2927-1039	Endpoint: Proportion Survived			CETIS Version: CETISv1.8.6					
Analyzed:	15 Jan-13 11:09	Analysis: Nonparametric-Two Sample			Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project			
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse			
22800-004	08-4834-2931	12 Nov-12 14:37	17 Nov-12 13:05	24d 21h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-004	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18K; 22800-004						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	5.41%					
Wilcoxon Rank Sum Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type		
22800-000		22800-004	44	NA	2	14	0.0061	Exact		
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)				
Extreme Value	Grubbs Extreme Value		2.32	2.586	0.1702	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	0.1207367		0.1207367		1	13.3	0.0026	Significant Effect		
Error	0.1271284		0.009080598		14					
Total	0.2478651				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		2.139	8.885	0.3371	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8254	0.8408	0.0060	Non-normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err		
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637		
22800-004	8	0.8625	0.8003	0.9247	0.85	0.8	1	0.02631		
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err		
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689		
22800-004	8	1.198	1.105	1.291	1.178	1.107	1.412	0.03933		
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	1	1	1	1	1	0.9	1		
22800-004	0.8	0.8	0.9	0.8	1	0.8	0.9	0.9		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412		
22800-004	1.107	1.107	1.249	1.107	1.412	1.107	1.249	1.249		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.				
Analysis ID:	04-3842-4348	Endpoint:	Proportion Survived				CETIS Version:	CETISv1.8.6			
Analyzed:	15 Jan-13 11:09	Analysis:	Parametric-Two Sample				Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse				
22800-003	11-7795-6459	12 Nov-12 13:21	17 Nov-12 13:05	24d 23h							
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude				
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000								
22800-003	Freshwater Sediment	Lower Passaic River Ecological R	UPRT18J; 22800-003								
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	8.05%						
Equal Variance t Two-Sample Test											
Sample Code	vs Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)			
22800-000	22800-003	1.693	1.761	0.129	14	0.0563	CDF	Non-Significant Effect			
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)						
Extreme Value	Grubbs Extreme Value	1.819	2.586	0.9101	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)					
Between	0.06138795	0.06138795	1	2.866	0.1126	Non-Significant Effect					
Error	0.299876	0.02141971	14								
Total	0.3612639		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:1\%$)						
Variances	Variance Ratio F	6.405	8.885	0.0256	Equal Variances						
Distribution	Shapiro-Wilk W Normality	0.8753	0.8408	0.0328	Normal Distribution						
Proportion Survived Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637			
22800-003	8	0.8875	0.7741	1	0.95	0.7	1	0.04795			
Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err			
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689			
22800-003	8	1.248	1.087	1.409	1.331	0.9912	1.412	0.06806			
Proportion Survived Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	0.9	1	1	1	1	1	0.9	1			
22800-003	0.8	1	1	1	0.9	1	0.7	0.7			
Angular (Corrected) Transformed Detail											
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412			
22800-003	1.107	1.412	1.412	1.412	1.249	1.412	0.9912	0.9912			

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID:	02-0782-8020	Endpoint:	Proportion Survived				CETIS Version:	CETISv1.8.6		
Analyzed:	15 Jan-13 11:09	Analysis:	Parametric-Two Sample				Official Results:	Yes		
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name		Project			
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental		Ecological Risk Asse			
22800-002	12-7608-5227	12 Nov-12 12:17	17 Nov-12 13:05	25d						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-002	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18H; 22800-002						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	4.7%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type		
22800-000		22800-002	1.545	1.761	0.071	14	0.0723	CDF		
Non-Significant Effect										
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.587	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)				
Between	0.01539824	0.01539824	1	2.388	0.1446	Non-Significant Effect				
Error	0.09029315	0.00644951	14							
Total	0.1056914		15							
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.23	8.885	0.7919	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8724	0.8408	0.0296	Normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err		
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637		
22800-002	8	0.9375	0.8942	0.9808	0.9	0.9	1	0.0183		
4.75% CV% 0.0% %Effect										
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err		
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689		
22800-002	8	1.31	1.24	1.381	1.249	1.249	1.412	0.02982		
5.54% CV% 0.0% %Effect										
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	1	1	1	1	1	0.9	1		
22800-002	0.9	0.9	1	1	0.9	0.9	1	0.9		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412		
22800-002	1.249	1.249	1.412	1.412	1.249	1.249	1.412	1.249		

CETIS Analytical Report

Report Date: 15 Jan-13 11:16 (p 28 of 53)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 05-8299-8996 Analyzed: 15 Jan-13 11:09			Endpoint: Proportion Survived Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-001	16-4551-8127	12 Nov-12 10:13	17 Nov-12 13:05	25d 2h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-001	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18I; 22800-001						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	12.7%					
Unequal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-001	3.238	1.895	0.198	7	0.0071	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.257	2.586	0.2178	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.4561094		0.4561094		1	10.48	0.0060	Significant Effect		
Error	0.6090728		0.0435052		14					
Total	1.065182				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		14.04	8.885	0.0025	Unequal Variances				
Distribution	Shapiro-Wilk W Normality		0.8837	0.8408	0.0443	Normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637	4.75%	0.0%
22800-001	8	0.7125	0.5155	0.9095	0.7	0.3	1	0.08332	33.08%	26.92%
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689	5.54%	0.0%
22800-001	8	1.035	0.7963	1.273	0.9966	0.5796	1.412	0.1008	27.55%	24.61%
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	1	1	1	1	1	0.9	1		
22800-001	1	0.8	0.6	1	0.3	0.8	0.6	0.6		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412		
22800-001	1.412	1.107	0.8861	1.412	0.5796	1.107	0.8861	0.8861		

CETIS Analytical Report

Report Date: 15 Jan-13 11:16 (p 29 of 53)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 11-1935-0843 Analyzed: 19 Dec-12 12:45			Endpoint: Proportion Survived Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-001	16-4551-8127	12 Nov-12 10:13	17 Nov-12 13:05	25d 2h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-001	Freshwater Sediment	Lower Passaic River Ecological R		UPR18I; 22800-001						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Angular (Corrected)	NA	C > T	NA	NA	12.7%					
Unequal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-001	3.238	1.895	0.198	7	0.0071	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :5%)				
Extreme Value	Grubbs Extreme Value		2.257	2.586	0.2178	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	0.4561094		0.4561094		1	10.48	0.0060	Significant Effect		
Error	0.6090728		0.0435052		14					
Total	1.065182				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		14.04	8.885	0.0025	Unequal Variances				
Distribution	Shapiro-Wilk W Normality		0.8837	0.8408	0.0443	Normal Distribution				
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	0.975	0.9363	1	1	0.9	1	0.01637	4.75%	0.0%
22800-001	8	0.7125	0.5155	0.9095	0.7	0.3	1	0.08332	33.08%	26.92%
Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.372	1.309	1.436	1.412	1.249	1.419	0.02689	5.54%	0.0%
22800-001	8	1.035	0.7963	1.273	0.9966	0.5796	1.412	0.1008	27.55%	24.61%
Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	0.9	1	1	1	1	1	0.9	1		
22800-001	1	0.8	0.6	1	0.3	0.8	0.6	0.6		
Angular (Corrected) Transformed Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.249	1.412	1.412	1.419	1.412	1.412	1.249	1.412		
22800-001	1.412	1.107	0.8861	1.412	0.5796	1.107	0.8861	0.8861		

**CETIS Analytical Reports
Ash Free Dry Weight Comparisons**

**in support of the Ecological Risk Assessment for
Lower Passaic River Remedial Investigation
Purchase Order Number 2012-0042**

CETIS Analytical Report

Report Date: 15 Jan-13 11:13 (p 1 of 25)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 13-9619-9045 Analyzed: 15 Jan-13 11:06			Endpoint: Mean AF Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-024	09-8169-6091	16 Nov-12 09:09	17 Nov-12 13:05	21d 3h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-024	Freshwater Sediment	Lower Passaic River Ecological R		UPRT22B; 22800-024						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	13.0%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-024	0.8222	1.761	0.245	14	0.2124	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.213	2.586	0.2581	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.05220743		0.05220743		1	0.6761	0.4247	Non-Significant Effect		
Error	1.081077		0.07721978		14					
Total	1.133284				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.741	8.885	0.4817	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9808	0.8408	0.9693	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-024	8	1.762	1.563	1.96	1.801	1.259	2.025	0.08392	13.47%	6.09%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-024	1.259	1.821	1.935	2.025	1.78	1.723	1.641	1.91		

CETIS Analytical Report

Report Date: 15 Jan-13 11:13 (p 2 of 25)
Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 12-7595-2616	Endpoint: Mean AF Weight-mg				CETIS Version: CETISv1.8.6					
Analyzed: 15 Jan-13 11:06	Analysis: Parametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-023	04-1666-1117	16 Nov-12 08:06	17 Nov-12 13:05	21d 4h						
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000							
22800-023	Freshwater Sediment	Lower Passaic River Ecological R	UPRT22A; 22800-023							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	21.3%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-023	-0.401	1.761	0.399	14	0.6528	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.067	2.586	0.4297	No Outliers Detected				
ANOVA Table										
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)				
Between	0.03306402	0.03306402	1	0.1608	0.6944	Non-Significant Effect				
Error	2.877999	0.2055714	14							
Total	2.911063		15							
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		3.191	8.885	0.1487	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9315	0.8408	0.2577	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-023	8	1.967	1.499	2.435	1.801	1.373	2.873	0.1978	28.45%	-4.85%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-023	1.509	2.873	1.373	1.487	1.623	1.978	2.425	2.467		

CETIS Analytical Report

Report Date: 15 Jan-13 11:13 (p 3 of 25)
Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 04-2371-2490	Endpoint: Mean AF Weight-mg				CETIS Version: CETISv1.8.6					
Analyzed: 15 Jan-13 11:06	Analysis: Parametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-022	08-0539-1503	15 Nov-12 12:25	17 Nov-12 13:05	22d						
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000							
22800-022	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21G; 22800-022							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	17.5%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-022	0.8849	1.771	0.328	13	0.1961	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.918	2.548	0.6281	No Outliers Detected				
ANOVA Table										
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)				
Between	0.1002113	0.1002113	1	0.783	0.3923	Non-Significant Effect				
Error	1.663742	0.1279802	13							
Total	1.763954		14							
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.66	9.155	0.5214	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9414	0.8328	0.4003	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-022	7	1.712	1.339	2.085	1.745	1.113	2.373	0.1525	23.57%	8.73%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-022	1.501	1.745	2.373	1.48	1.988	1.784	1.113			

CETIS Analytical Report

Report Date: 15 Jan-13 11:13 (p 4 of 25)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 00-4041-0057 Analyzed: 15 Jan-13 11:06			Endpoint: Mean AF Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-021	09-5811-7655	15 Nov-12 11:29	17 Nov-12 13:05	22d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-021	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21F; 22800-021						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	16.0%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-021	-2.097	1.761	0.299	14	0.9727	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.409	2.586	0.1167	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.5079649		0.5079649		1	4.397	0.0546	Non-Significant Effect		
Error	1.617357		0.1155255		14					
Total	2.125322				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.355	8.885	0.6984	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8484	0.8408	0.0129	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-021	8	2.232	1.928	2.537	2.121	1.895	3.023	0.1289	16.33%	-19.0%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-021	1.895	2.41	2.312	2.187	2.056	3.023	1.969	2.007		

CETIS Analytical Report

Report Date: 15 Jan-13 11:13 (p 5 of 25)
Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 04-0573-1380	Endpoint: Mean AF Weight-mg				CETIS Version: CETISv1.8.6					
Analyzed: 15 Jan-13 11:07	Analysis: Parametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-020	07-2784-0432	15 Nov-12 10:52	17 Nov-12 13:05	22d 1h						
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000							
22800-020	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21E; 22800-020							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	11.7%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-020	1.914	1.761	0.220	14	0.0382	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.46	2.586	0.0928	No Outliers Detected				
ANOVA Table										
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)				
Between	0.2288506	0.2288506	1	3.663	0.0763	Non-Significant Effect				
Error	0.874772	0.06248371	14							
Total	1.103623		15							
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		3.65	8.885	0.1091	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9291	0.8408	0.2360	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-020	8	1.637	1.5	1.774	1.631	1.307	1.834	0.05796	10.01%	12.75%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-020	1.65	1.803	1.307	1.573	1.716	1.612	1.834	1.6		

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Report Date: 15 Jan-13 11:13 (p 6 of 25)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 15-4627-5467 Analyzed: 15 Jan-13 11:07			Endpoint: Mean AF Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-019	07-8610-6905	15 Nov-12 10:08	17 Nov-12 13:05	22d 2h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-019	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21D; 22800-019						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	15.7%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-019	-1.153	1.771	0.294	13	0.8651	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.922	2.548	0.6202	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.1366474		0.1366474		1	1.329	0.2698	Non-Significant Effect		
Error	1.337077		0.1028521		13					
Total	1.473725				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.105	9.155	0.8864	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9374	0.8328	0.3503	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-019	7	2.067	1.763	2.372	2.142	1.629	2.592	0.1244	15.93%	-10.2%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-019	1.872	2.142	1.629	2.592	1.776	2.217	2.243			

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.
Analysis ID:	06-0721-9105	Endpoint: Mean AF Weight-mg			CETIS Version:	CETISv1.8.6	
Analyzed:	15 Jan-13 11:07	Analysis: Parametric-Two Sample			Official Results:	Yes	
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project	
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse	
22800-018	09-1843-1107	15 Nov-12 09:17	17 Nov-12 13:05	22d 3h			
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000				
22800-018	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21C; 22800-018				
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result	
Untransformed	NA	C > T	NA	NA	17.1%		
Equal Variance t Two-Sample Test							
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value
22800-000		22800-018	-0.4456	1.771	0.320	13	0.6684
					CDF	Non-Significant Effect	
Auxiliary Tests							
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)	
Extreme Value	Grubbs Extreme Value		1.764	2.548	0.9742	No Outliers Detected	
ANOVA Table							
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)	
Between	0.02424381	0.02424381	1	0.1986	0.6632	Non-Significant Effect	
Error	1.58715	0.1220885	13				
Total	1.611394		14				
Distributional Tests							
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)	
Variances	Variance Ratio F		1.53	9.155	0.5881	Equal Variances	
Distribution	Shapiro-Wilk W Normality		0.9497	0.8328	0.5194	Normal Distribution	
Mean AF Weight-mg Summary							
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47
22800-018	7	1.957	1.598	2.315	1.977	1.38	2.4
Std Err						CV%	%Effect
						16.7%	0.0%
						19.8%	-4.3%
Mean AF Weight-mg Detail							
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788
22800-018	1.38	2.32	1.977	1.763	2.4	2.244	1.612
Rep 8							

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Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 10-8576-5316	Endpoint: Mean AF Weight-mg				CETIS Version: CETISv1.8.6					
Analyzed: 15 Jan-13 11:07	Analysis: Parametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-017	03-2230-4522	15 Nov-12 08:19	17 Nov-12 13:05	22d 4h						
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000							
22800-017	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21B; 22800-017							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	22.2%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-017	-1.528	1.771	0.416	13	0.9247	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.977	2.548	0.5231	No Outliers Detected				
ANOVA Table										
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)				
Between	0.4810694	0.4810694	1	2.333	0.1506	Non-Significant Effect				
Error	2.680306	0.2061774	13							
Total	3.161376		14							
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		3.387	9.155	0.1355	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9697	0.8328	0.8534	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-017	7	2.235	1.702	2.768	2.241	1.394	3.1	0.2179	25.79%	-19.13%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-017	2.018	1.394	1.764	2.241	2.728	3.1	2.398			

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.
Analysis ID:	13-4407-1253	Endpoint: Mean AF Weight-mg			CETIS Version:	CETISv1.8.6	
Analyzed:	15 Jan-13 12:04	Analysis: Parametric-Two Sample			Official Results:	Yes	
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project	
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse	
22800-016	12-7040-7515	14 Nov-12 13:52	17 Nov-12 13:05	22d 22h			
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000				
22800-016	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21A; 22800-016				
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result	
Untransformed	NA	C > T	NA	NA	18.8%		
Equal Variance t Two-Sample Test							
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value
22800-000		22800-016	0.8923	1.761	0.353	14	0.1937
					CDF	Non-Significant Effect	
Auxiliary Tests							
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)	
Extreme Value	Grubbs Extreme Value		1.772	2.586	1.0000	No Outliers Detected	
ANOVA Table							
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)	
Between	0.1279607	0.1279607	1	0.7962	0.3873	Non-Significant Effect	
Error	2.249951	0.1607108	14				
Total	2.377912		15				
Distributional Tests							
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)	
Variances	Variance Ratio F		2.277	8.885	0.3000	Equal Variances	
Distribution	Shapiro-Wilk W Normality		0.8866	0.8408	0.0492	Normal Distribution	
Mean AF Weight-mg Summary							
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47
22800-016	8	1.697	1.302	2.092	1.551	1.231	2.383
Std Err						CV%	%Effect
						16.7%	0.0%
						27.85%	9.53%
Mean AF Weight-mg Detail							
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788
22800-016	1.401	2.383	2.36	1.894	1.31	1.7	1.231
						1.557	1.298

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 01-5591-1415 Analyzed: 15 Jan-13 11:07			Endpoint: Mean AF Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-015	07-6377-7783	14 Nov-12 12:52	17 Nov-12 13:05	22d 23h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-015	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20G; 22800-015						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	16.3%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-015	0.6701	1.771	0.306	13	0.2573	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.237	2.548	0.2082	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.05009067		0.05009067		1	0.449	0.5145	Non-Significant Effect		
Error	1.450372		0.1115671		13					
Total	1.500462				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.298	9.155	0.7340	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9712	0.8328	0.8759	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-015	7	1.76	1.43	2.09	1.86	1.04	2.084	0.1348	20.27%	6.17%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-015	1.04	1.973	2.084	1.742	1.86	2.01	1.612			

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Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 14-7828-1166 Analyzed: 15 Jan-13 11:07			Endpoint: Mean AF Weight-mg Analysis: Nonparametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-014	12-2328-2385	14 Nov-12 11:49	17 Nov-12 13:05	23d 0h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-014	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20F; 22800-014						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	18.0%					
Wilcoxon Rank Sum Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-014	34	NA	0	13	0.0047	Exact	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.462	2.548	0.0778	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	1.671189		1.671189		1	12.34	0.0038	Significant Effect		
Error	1.76085		0.13545		13					
Total	3.432039				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.825	9.155	0.4493	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8253	0.8328	0.0079	Non-normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-014	7	1.207	0.8156	1.598	1.038	0.9	2.08	0.1599	35.06%	35.66%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-014	2.08	0.9067	1.038	0.9271	0.9	1.344	1.252			

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Report Date: 15 Jan-13 11:13 (p 11 of 25)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 09-3640-7064 Analyzed: 15 Jan-13 11:08			Endpoint: Mean AF Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-013	13-4098-0624	14 Nov-12 11:12	17 Nov-12 13:05	23d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-013	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20E; 22800-013						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	12.8%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-013	1.759	1.761	0.240	14	0.0502	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.252	2.586	0.2224	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.2306604		0.2306604		1	3.094	0.1004	Non-Significant Effect		
Error	1.043601		0.07454289		14					
Total	1.274261				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.924	8.885	0.4075	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9239	0.8408	0.1945	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-013	8	1.636	1.447	1.825	1.608	1.288	1.967	0.07984	13.8%	12.8%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-013	1.438	1.764	1.54	1.874	1.567	1.967	1.649	1.288		

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Report Date: 15 Jan-13 11:13 (p 12 of 25)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 20-0323-0536 Analyzed: 15 Jan-13 11:08			Endpoint: Mean AF Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-012	08-8087-7260	14 Nov-12 09:14	17 Nov-12 13:05	23d 3h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-012	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20D; 22800-012						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	12.5%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-012	3.337	1.771	0.235	13	0.0027	CDF	Significant Effect	
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	0.7290947		0.7290947		1	11.14	0.0054	Significant Effect		
Error	0.8510624		0.06546634		13					
Total	1.580157				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		3.58	10.79	0.1412	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8877	0.8328	0.0618	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-012	7	1.434	1.281	1.587	1.39	1.253	1.722	0.06256	11.54%	23.56%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-012	1.476	1.558	1.253	1.36	1.39	Outlier	1.722	1.279		

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Report Date: 15 Jan-13 11:13 (p 13 of 25)
Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 07-2840-4907	Endpoint: Mean AF Weight-mg				CETIS Version: CETISv1.8.6					
Analyzed: 15 Jan-13 11:08	Analysis: Nonparametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-012	08-8087-7260	14 Nov-12 09:14	17 Nov-12 13:05	23d 3h						
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000							
22800-012	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20D; 22800-012							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	17.6%					
Wilcoxon Rank Sum Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-012	48	NA	0	14	0.0190	Exact	Significant Effect	
Auxiliary Tests										
Attribute	Test	Test Stat		Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value	2.728		2.586	0.0225	Outlier Detected				
ANOVA Table										
Source	Sum Squares	Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)			
Between	0.3620871	0.3620871		1	2.579	0.1306	Non-Significant Effect			
Error	1.965212	0.1403723		14						
Total	2.3273			15						
Distributional Tests										
Attribute	Test	Test Stat		Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F	1.862		8.885	0.4310	Equal Variances				
Distribution	Shapiro-Wilk W Normality	0.7913		0.8408	0.0021	Non-normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-012	8	1.575	1.218	1.932	1.433	1.253	2.563	0.1511	27.13%	16.04%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-012	1.476	1.558	1.253	1.36	1.39	2.563	1.722	1.279		

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Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 03-0972-3141	Endpoint: Mean AF Weight-mg				CETIS Version: CETISv1.8.6					
Analyzed: 15 Jan-13 11:08	Analysis: Parametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-011	06-7617-7021	14 Nov-12 08:15	17 Nov-12 13:05	23d 4h						
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000							
22800-011	Freshwater Sediment	Lower Passaic River Ecological R	UPRT20C; 22800-011							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	15.5%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-011	0.6663	1.782	0.291	12	0.2589	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.046	2.507	0.3744	No Outliers Detected				
ANOVA Table										
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)				
Between	0.0405499	0.0405499	1	0.4439	0.5178	Non-Significant Effect				
Error	1.096075	0.09133955	12							
Total	1.136624		13							
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.198	14.2	0.8720	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8938	0.8239	0.0917	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-011	6	1.767	1.467	2.068	1.716	1.397	2.24	0.1168	16.19%	5.8%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-011	1.638	1.897	2.24	1.397	1.786	1.647				

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 07-1750-0403 Analyzed: 15 Jan-13 11:08			Endpoint: Mean AF Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-010	00-6504-4240	13 Nov-12 14:41	17 Nov-12 13:05	23d 21h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-010	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20B; 22800-010						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	18.7%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-010	-0.3762	1.761	0.351	14	0.6438	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.077	2.586	0.4160	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.02253021		0.02253021		1	0.1415	0.7124	Non-Significant Effect		
Error	2.228458		0.1591756		14					
Total	2.250988				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.245	8.885	0.3080	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9484	0.8408	0.4652	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-010	8	1.951	1.559	2.343	1.905	1.18	2.752	0.1659	24.05%	-4.0%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-010	1.18	1.965	1.65	1.844	2.164	2.752	2.298	1.756		

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Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 18-5289-5130 Analyzed: 15 Jan-13 11:08			Endpoint: Mean AF Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-009	08-6088-6776	13 Nov-12 13:30	17 Nov-12 13:05	23d 22h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-009	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20A; 22800-009						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	13.3%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-009	0.8536	1.771	0.25	13	0.2044	CDF	Non-Significant Effect	
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	0.05411096		0.05411096		1	0.7286	0.4088	Non-Significant Effect		
Error	0.9654512		0.07426548		13					
Total	1.019562				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		2.111	10.79	0.3813	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9129	0.8328	0.1502	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-009	7	1.756	1.556	1.955	1.861	1.504	1.974	0.08147	12.28%	6.42%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-009	1.504	1.974	1.546	1.916	1.861	Outlier	1.952	1.536		

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Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 21-1174-0584 Analyzed: 15 Jan-13 11:08			Endpoint: Mean AF Weight-mg Analysis: Nonparametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-009	08-6088-6776	13 Nov-12 13:30	17 Nov-12 13:05	23d 22h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-009	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20A; 22800-009						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	19.2%					
Wilcoxon Rank Sum Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-009	68	NA	0	14	0.5204	Exact	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.778	2.586	0.0165	Outlier Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.005301825		0.005301825		1	0.03169	0.8613	Non-Significant Effect		
Error	2.342243		0.1673031		14					
Total	2.347545				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.411	8.885	0.2684	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8335	0.8408	0.0079	Non-normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-009	8	1.912	1.506	2.319	1.888	1.504	3.01	0.1719	25.43%	-1.94%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-009	1.504	1.974	1.546	1.916	1.861	3.01	1.952	1.536		

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Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 06-7310-9641 Analyzed: 15 Jan-13 11:08			Endpoint: Mean AF Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-008	11-9606-6366	13 Nov-12 11:59	17 Nov-12 13:05	24d 0h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-008	Freshwater Sediment	Lower Passaic River Ecological R		UPRT19M; 22800-008						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	16.3%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-008	1.073	1.771	0.306	13	0.1513	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.112	2.548	0.3327	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.1283913		0.1283913		1	1.152	0.3027	Non-Significant Effect		
Error	1.448903		0.111454		13					
Total	1.577294				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.295	9.155	0.7358	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8862	0.8328	0.0587	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-008	7	1.691	1.361	2.02	1.692	1.313	2.37	0.1347	21.08%	9.89%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-008	1.397	1.854	1.482	2.37	1.726	1.692	1.313			

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Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 05-4195-3976 Analyzed: 15 Jan-13 11:08			Endpoint: Mean AF Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-007	04-8067-7422	13 Nov-12 10:55	17 Nov-12 13:05	24d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-007	Freshwater Sediment	Lower Passaic River Ecological R		UPRT19L; 22800-007						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	14.2%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-007	1.544	1.771	0.266	13	0.0733	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.128	2.548	0.3145	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.2000492		0.2000492		1	2.384	0.1466	Non-Significant Effect		
Error	1.091006		0.08392354		13					
Total	1.291055				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.456	10.79	0.6634	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8842	0.8328	0.0548	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-007	7	1.645	1.404	1.885	1.61	1.317	2.122	0.09812	15.79%	12.34%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-007	2.122	1.774	1.61	1.501	1.707	1.48	1.317			

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Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 00-3590-5325 Analyzed: 15 Jan-13 11:08			Endpoint: Mean AF Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-006	15-2324-2159	13 Nov-12 09:46	17 Nov-12 13:05	24d 2h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-006	Freshwater Sediment	Lower Passaic River Ecological R		UPRT19K; 22800-006						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	11.9%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-006	1.453	1.761	0.223	14	0.0842	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.434	2.586	0.1045	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.1346743		0.1346743		1	2.11	0.1684	Non-Significant Effect		
Error	0.8936733		0.06383381		14					
Total	1.028348				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		3.317	8.885	0.1362	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8917	0.8408	0.0593	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-006	8	1.693	1.549	1.836	1.674	1.431	2.015	0.0608	10.16%	9.78%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-006	1.713	1.702	1.431	2.015	1.603	1.822	1.609	1.646		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 03-2779-5075 Analyzed: 15 Jan-13 11:09			Endpoint: Mean AF Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-004	08-4834-2931	12 Nov-12 14:37	17 Nov-12 13:05	24d 21h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-004	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18K; 22800-004						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	8.71%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α :5%)	
22800-000		22800-004	3.714	1.782	0.156	12	0.0015	CDF	Significant Effect	
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α :5%)		
Between	0.3694852		0.3694852		1	13.79	0.0030	Significant Effect		
Error	0.3214841		0.02679034		12					
Total	0.6909692				13					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision(α :1%)				
Variances	Variance Ratio F		7.449	11.07	0.0275	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8505	0.8239	0.0225	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	7	1.791	1.59	1.992	1.775	1.557	2.24	0.08215	12.13%	0.0%
22800-004	7	1.466	1.393	1.54	1.479	1.346	1.569	0.0301	5.43%	18.14%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	Outlier	1.72	1.775	1.813	1.788	1.557		
22800-004	1.493	1.479	1.346	1.569	1.547	1.401	1.429			

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 11-1865-2906 Analyzed: 15 Jan-13 11:09			Endpoint: Mean AF Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-004	08-4834-2931	12 Nov-12 14:37	17 Nov-12 13:05	24d 21h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-004	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18K; 22800-004						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	11.4%					
Unequal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-004	3.571	1.86	0.213	8	0.0036	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.611	2.548	0.0354	Outlier Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.6268611		0.6268611		1	11.24	0.0052	Significant Effect		
Error	0.7247166		0.05574743		13					
Total	1.351578				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		15.47	10.79	0.0038	Unequal Variances				
Distribution	Shapiro-Wilk W Normality		0.8755	0.8328	0.0407	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-004	7	1.466	1.393	1.54	1.479	1.346	1.569	0.0301	5.43%	21.84%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-004	1.493	1.479	1.346	1.569	1.547	1.401	1.429			

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 12-5591-4233 Analyzed: 15 Jan-13 11:09			Endpoint: Mean AF Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-003	11-7795-6459	12 Nov-12 13:21	17 Nov-12 13:05	24d 23h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-003	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18J; 22800-003						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	13.0%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-003	2.397	1.761	0.244	14	0.0155	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.224	2.586	0.2477	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.4392206		0.4392206		1	5.745	0.0311	Significant Effect		
Error	1.070354		0.07645386		14					
Total	1.509575				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.79	8.885	0.4605	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8927	0.8408	0.0615	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-003	8	1.545	1.349	1.74	1.505	1.276	1.948	0.08277	15.16%	17.66%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-003	1.399	1.611	1.768	1.363	1.631	1.948	1.362	1.276		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 17-7641-9162 Analyzed: 15 Jan-13 11:09			Endpoint: Mean AF Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-002	12-7608-5227	12 Nov-12 12:17	17 Nov-12 13:05	25d						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-002	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18H; 22800-002						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	17.9%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-002	1.735	1.782	0.335	12	0.0542	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.775	2.507	0.8676	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.3652942		0.3652942		1	3.01	0.1083	Non-Significant Effect		
Error	1.456383		0.1213653		12					
Total	1.821677				13					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.569	9.522	0.5666	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9351	0.8239	0.3593	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-002	6	1.55	1.138	1.961	1.579	1	2.007	0.1602	25.32%	17.4%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-002	2.007	1.333	1.827	1.825	1.306	1				

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 04-7936-7825 Analyzed: 15 Jan-13 11:09			Endpoint: Mean AF Weight-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-001	16-4551-8127	12 Nov-12 10:13	17 Nov-12 13:05	25d 2h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-001	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18I; 22800-001						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	15.7%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-001	0.9975	1.771	0.294	13	0.1684	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.923	2.548	0.6181	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.1022111		0.1022111		1	0.9949	0.3367	Non-Significant Effect		
Error	1.335499		0.1027307		13					
Total	1.43771				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.102	9.155	0.8887	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9211	0.8328	0.2001	Normal Distribution				
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.876	1.614	2.138	1.782	1.557	2.47	0.1107	16.7%	0.0%
22800-001	7	1.711	1.406	2.015	1.694	1.319	2.187	0.1243	19.22%	8.82%
Mean AF Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.646	2.24	2.47	1.72	1.775	1.813	1.788	1.557		
22800-001	1.319	1.862	1.367	2.017	2.187	1.694	1.528			

**CETIS Analytical Reports
Ash Free Biomass Comparisons**

**in support of the Ecological Risk Assessment for
Lower Passaic River Remedial Investigation
Purchase Order Number 2012-0042**

CETIS Analytical Report

Report Date: 15 Jan-13 11:11 (p 1 of 22)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 03-0206-3191 Analyzed: 15 Jan-13 11:06			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-024	09-8169-6091	16 Nov-12 09:09	17 Nov-12 13:05	21d 3h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-024	Freshwater Sediment	Lower Passaic River Ecological R		UPRT22B; 22800-024						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	22.1%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-024	0.4764	1.761	0.265	14	0.3206	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.969	2.586	0.5883	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.02058609		0.02058609		1	0.227	0.6411	Non-Significant Effect		
Error	1.269904		0.09070741		14					
Total	1.29049				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.402	8.885	0.2704	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.964	0.8408	0.7342	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-024	8	1.13	0.9373	1.323	1.21	0.774	1.424	0.08165	20.43%	5.97%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-024	0.881	1.275	0.774	1.215	1.424	1.206	1.313	0.955		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 01-6362-9505 Analyzed: 15 Jan-13 11:06			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-023	04-1666-1117	16 Nov-12 08:06	17 Nov-12 13:05	21d 4h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-023	Freshwater Sediment	Lower Passaic River Ecological R		UPRT22A; 22800-023						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	22.2%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-023	1.27	1.761	0.267	14	0.1124	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.957	2.586	0.6096	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.1479807		0.1479807		1	1.612	0.2249	Non-Significant Effect		
Error	1.285051		0.09178937		14					
Total	1.433032				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.308	8.885	0.2922	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.972	0.8408	0.8706	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-023	8	1.01	0.8128	1.207	1.022	0.485	1.248	0.08329	23.33%	16.0%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-023	1.056	1.149	1.248	1.19	0.974	0.989	0.485	0.987		

CETIS Analytical Report

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 12-3040-2283 Analyzed: 15 Jan-13 11:06			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-022	08-0539-1503	15 Nov-12 12:25	17 Nov-12 13:05	22d						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-022	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21G; 22800-022						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	23.5%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-022	0.9518	1.771	0.283	13	0.1793	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.925	2.548	0.6141	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.08638456		0.08638456		1	0.906	0.3585	Non-Significant Effect		
Error	1.239516		0.09534738		13					
Total	1.325901				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.241	10.79	0.3448	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9459	0.8328	0.4619	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-022	7	1.05	0.8289	1.271	1.184	0.698	1.249	0.09036	22.77%	12.65%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-022	1.201	0.698	0.712	1.184	1.193	1.249	1.113			

CETIS Analytical Report

Report Date: 15 Jan-13 11:11 (p 4 of 22)
Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 01-2612-5269	Endpoint: Mean AF Biomass-mg				CETIS Version: CETISv1.8.6					
Analyzed: 15 Jan-13 11:07	Analysis: Parametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-021	09-5811-7655	15 Nov-12 11:29	17 Nov-12 13:05	22d 1h						
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000							
22800-021	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21F; 22800-021							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	24.0%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-021	-1.014	1.761	0.289	14	0.8360	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.807	2.586	0.9412	No Outliers Detected				
ANOVA Table										
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)				
Between	0.1106918	0.1106918	1	1.027	0.3280	Non-Significant Effect				
Error	1.508464	0.1077474	14							
Total	1.619156		15							
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.465	8.885	0.6267	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9861	0.8408	0.9941	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-021	8	1.368	1.121	1.616	1.413	0.803	1.814	0.1045	21.6%	-13.84%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-021	1.516	1.205	1.387	1.531	1.439	1.814	1.253	0.803		

CETIS Analytical Report

Report Date: 15 Jan-13 11:11 (p 5 of 22)
Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 11-8895-6511	Endpoint: Mean AF Biomass-mg				CETIS Version: CETISv1.8.6					
Analyzed: 15 Jan-13 11:07	Analysis: Parametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-020	07-2784-0432	15 Nov-12 10:52	17 Nov-12 13:05	22d 1h						
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000							
22800-020	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21E; 22800-020							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	28.1%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-020	0.8536	1.761	0.338	14	0.2038	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision($\alpha:5\%$)			
Extreme Value	Grubbs Extreme Value			1.741	2.586	1.0000	No Outliers Detected			
ANOVA Table										
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)				
Between	0.1075697	0.1075697	1	0.7286	0.4077	Non-Significant Effect				
Error	2.066858	0.1476327	14							
Total	2.174428		15							
Distributional Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision($\alpha:1\%$)			
Variances	Variance Ratio F			1.305	8.885	0.7342	Equal Variances			
Distribution	Shapiro-Wilk W Normality			0.9309	0.8408	0.2522	Normal Distribution			
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-020	8	1.038	0.6963	1.38	1.26	0.392	1.451	0.1446	39.39%	13.64%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-020	1.32	1.262	0.392	1.258	0.858	1.451	1.284	0.48		

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Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 17-2682-8882 Analyzed: 15 Jan-13 11:07			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-019	07-8610-6905	15 Nov-12 10:08	17 Nov-12 13:05	22d 2h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-019	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21D; 22800-019						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	22.5%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-019	0.02605	1.771	0.27	13	0.4898	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.018	2.548	0.4582	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	5.887661E-05		5.887661E-05		1	0.0006784	0.9796	Non-Significant Effect		
Error	1.128181		0.08678319		13					
Total	1.12824				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		3.318	10.79	0.1651	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9752	0.8328	0.9267	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-019	7	1.198	1.016	1.38	1.243	0.887	1.466	0.07426	16.4%	0.33%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-019	1.123	1.285	1.466	1.037	1.243	0.887	1.346			

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Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 18-0202-7956 Analyzed: 15 Jan-13 11:07			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-018	09-1843-1107	15 Nov-12 09:17	17 Nov-12 13:05	22d 3h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-018	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21C; 22800-018						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	28.0%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-018	0.5812	1.771	0.337	13	0.2855	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.772	2.548	0.9531	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.04561983		0.04561983		1	0.3378	0.5710	Non-Significant Effect		
Error	1.75554		0.1350416		13					
Total	1.80116				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.118	9.155	0.8754	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9672	0.8328	0.8141	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-018	7	1.092	0.7416	1.441	1.058	0.464	1.68	0.143	34.66%	9.2%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-018	0.966	0.464	1.384	1.058	1.68	1.122	0.967			

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Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 04-3999-5980 Analyzed: 15 Jan-13 11:07			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-017	03-2230-4522	15 Nov-12 08:19	17 Nov-12 13:05	22d 4h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-017	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21B; 22800-017						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	24.7%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-017	-0.8904	1.771	0.296	13	0.8053	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.838	2.548	0.7935	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.08291589		0.08291589		1	0.7927	0.3895	Non-Significant Effect		
Error	1.359733		0.1045949		13					
Total	1.442649				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.659	10.79	0.5539	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9422	0.8328	0.4111	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-017	7	1.351	1.094	1.608	1.439	0.976	1.637	0.105	20.56%	-12.4%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-017	1.009	0.976	1.588	1.569	1.637	1.24	1.439			

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Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 02-5692-9210 Analyzed: 15 Jan-13 11:07			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-016	12-7040-7515	14 Nov-12 13:52	17 Nov-12 13:05	22d 22h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-016	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21A; 22800-016						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	20.9%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-016	0.7681	1.761	0.252	14	0.2276	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.075	2.586	0.4185	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.04817041		0.04817041		1	0.59	0.4552	Non-Significant Effect		
Error	1.14303		0.08164497		14					
Total	1.1912				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		3.638	8.885	0.1100	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9804	0.8408	0.9664	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-016	8	1.092	0.9355	1.249	1.043	0.85	1.43	0.06634	17.18%	9.13%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-016	1.261	1.43	1.18	0.947	1.048	0.85	0.985	1.038		

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Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 02-5059-7123 Analyzed: 15 Jan-13 11:07			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-015	07-6377-7783	14 Nov-12 12:52	17 Nov-12 13:05	22d 23h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-015	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20G; 22800-015						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	26.8%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-015	0.2402	1.771	0.322	13	0.4069	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.692	2.548	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.007124622		0.007124622		1	0.05772	0.8139	Non-Significant Effect		
Error	1.604723		0.1234403		13					
Total	1.611848				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.085	10.79	0.9367	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9638	0.8328	0.7574	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-015	7	1.158	0.8407	1.476	1.116	0.624	1.608	0.1298	29.66%	3.63%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-015	0.624	1.184	1.042	1.568	1.116	1.608	0.967			

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Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 14-3409-7659 Analyzed: 15 Jan-13 11:07			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-014	12-2328-2385	14 Nov-12 11:49	17 Nov-12 13:05	23d 0h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-014	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20F; 22800-014						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	26.0%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-014	3.241	1.771	0.312	13	0.0032	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.88	2.548	0.7023	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	1.217707		1.217707		1	10.5	0.0064	Significant Effect		
Error	1.507219		0.1159399		13					
Total	2.724926				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.259	10.79	0.7952	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.947	0.8328	0.4781	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-014	7	0.631	0.336	0.926	0.623	0.18	1.248	0.1206	50.56%	47.51%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-014	1.248	0.544	0.623	0.649	0.18	0.672	0.501			

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Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 15-4738-9164 Analyzed: 15 Jan-13 11:08			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-013	13-4098-0624	14 Nov-12 11:12	17 Nov-12 13:05	23d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-013	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20E; 22800-013						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	24.8%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-013	0.197	1.761	0.298	14	0.4233	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.751	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.004452623		0.004452623		1	0.03881	0.8467	Non-Significant Effect		
Error	1.606376		0.1147412		14					
Total	1.610829				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.263	8.885	0.7657	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9559	0.8408	0.5877	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-013	8	1.169	0.9025	1.435	1.276	0.644	1.567	0.1126	27.25%	2.78%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-013	0.863	1.411	1.232	0.937	1.567	1.377	1.319	0.644		

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Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 08-8237-6450 Analyzed: 15 Jan-13 11:08			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-012	08-8087-7260	14 Nov-12 09:14	17 Nov-12 13:05	23d 3h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-012	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20D; 22800-012						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	22.0%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-012	0.9534	1.761	0.265	14	0.1783	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.971	2.586	0.5847	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.08227786		0.08227786		1	0.9089	0.3566	Non-Significant Effect		
Error	1.267343		0.09052448		14					
Total	1.349621				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.418	8.885	0.2668	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9611	0.8408	0.6815	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-012	8	1.059	0.8663	1.251	1.12	0.689	1.279	0.08137	21.74%	11.93%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-012	0.738	1.275	1.128	1.224	1.112	1.025	0.689	1.279		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 20-0265-1054 Analyzed: 15 Jan-13 11:08			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-011	06-7617-7021	14 Nov-12 08:15	17 Nov-12 13:05	23d 4h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-011	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20C; 22800-011						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	29.7%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-011	-1.139	1.782	0.357	12	0.8615	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.663	2.507	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.1783131		0.1783131		1	1.297	0.2769	Non-Significant Effect		
Error	1.649288		0.1374407		12					
Total	1.827601				13					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.175	9.522	0.8144	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9684	0.8239	0.8544	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-011	6	1.43	1.023	1.837	1.405	0.838	2.016	0.1584	27.13%	-18.97%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-011	1.31	1.328	2.016	0.838	1.607	1.482				

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 17-3899-0781 Analyzed: 15 Jan-13 11:08			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-010	00-6504-4240	13 Nov-12 14:41	17 Nov-12 13:05	23d 21h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-010	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20B; 22800-010						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	29.0%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-010	-0.5316	1.761	0.349	14	0.6983	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.691	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.04442476		0.04442476		1	0.2826	0.6033	Non-Significant Effect		
Error	2.200516		0.1571797		14					
Total	2.244941				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.454	8.885	0.6335	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9591	0.8408	0.6451	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-010	8	1.307	0.9467	1.668	1.304	0.66	1.844	0.1526	33.01%	-8.77%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-010	1.18	0.786	0.66	1.844	1.731	1.651	1.379	1.229		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 03-4858-0240 Analyzed: 15 Jan-13 12:05			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-009	08-6088-6776	13 Nov-12 13:30	17 Nov-12 13:05	23d 22h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-009	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20A; 22800-009						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	27.0%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-009	-0.2506	1.761	0.324	14	0.5971	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.723	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.008514062		0.008514062		1	0.0628	0.8058	Non-Significant Effect		
Error	1.898031		0.1355736		14					
Total	1.906545				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.117	8.885	0.8878	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8977	0.8408	0.0740	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-009	8	1.248	0.932	1.564	1.078	0.903	1.861	0.1337	30.3%	-3.84%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-009	1.354	1.777	1.082	0.958	1.861	0.903	0.976	1.075		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 14-0179-1472 Analyzed: 15 Jan-13 11:08			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-008	11-9606-6366	13 Nov-12 11:59	17 Nov-12 13:05	24d 0h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-008	Freshwater Sediment	Lower Passaic River Ecological R		UPRT19M; 22800-008						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	22.3%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-008	-0.007727	1.771	0.269	13	0.5030	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.029	2.548	0.4417	No Outliers Detected				
ANOVA Table										
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)				
Between	5.125185E-06	5.125185E-06	1	5.971E-05	0.9940	Non-Significant Effect				
Error	1.115875	0.08583651	13							
Total	1.11588		14							
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		3.505	10.79	0.1476	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9684	0.8328	0.8339	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-008	7	1.203	1.026	1.38	1.298	0.948	1.397	0.07226	15.89%	-0.1%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-008	1.397	1.298	1.334	0.948	1.381	1.015	1.05			

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 08-8004-8473 Analyzed: 15 Jan-13 11:08			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-007	04-8067-7422	13 Nov-12 10:55	17 Nov-12 13:05	24d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-007	Freshwater Sediment	Lower Passaic River Ecological R		UPRT19L; 22800-007						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	22.3%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-007	0.8144	1.771	0.269	13	0.2150	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.028	2.548	0.4431	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.05698077		0.05698077		1	0.6632	0.4301	Non-Significant Effect		
Error	1.11691		0.08591615		13					
Total	1.173891				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		3.488	10.79	0.1491	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.98	0.8328	0.9698	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-007	7	1.079	0.9013	1.256	1.127	0.74	1.273	0.07243	17.77%	10.28%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-007	1.273	1.242	1.127	1.051	1.195	0.74	0.922			

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 16-5769-3116 Analyzed: 15 Jan-13 11:08			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-006	15-2324-2159	13 Nov-12 09:46	17 Nov-12 13:05	24d 2h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-006	Freshwater Sediment	Lower Passaic River Ecological R		UPRT19K; 22800-006						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	26.1%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-006	0.9762	1.761	0.314	14	0.1728	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.815	2.586	0.9190	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.1210889		0.1210889		1	0.953	0.3455	Non-Significant Effect		
Error	1.77886		0.1270614		14					
Total	1.899948				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.016	8.885	0.9836	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9724	0.8408	0.8763	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-006	8	1.028	0.7313	1.325	1.139	0.403	1.431	0.1255	34.53%	14.47%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-006	1.199	1.362	1.431	0.403	0.641	0.911	1.126	1.152		

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Report Date: 15 Jan-13 11:12 (p 19 of 22)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 09-2601-2534 Analyzed: 15 Jan-13 11:09			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-004	08-4834-2931	12 Nov-12 14:37	17 Nov-12 13:05	24d 21h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-004	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18K; 22800-004						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	22.0%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-004	-0.0978	1.771	0.264	13	0.5382	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.061	2.548	0.3970	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.0007958284		0.0007958284		1	0.009565	0.9236	Non-Significant Effect		
Error	1.081601		0.0832001		13					
Total	1.082397				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		4.154	10.79	0.1028	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9742	0.8328	0.9150	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-004	7	1.217	1.054	1.379	1.194	1.035	1.569	0.06637	14.43%	-1.22%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-004	1.194	1.035	1.077	1.569	1.238	1.261	1.143			

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 13-7977-4453 Analyzed: 15 Jan-13 11:09			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-003	11-7795-6459	12 Nov-12 13:21	17 Nov-12 13:05	24d 23h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-003	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18J; 22800-003						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	26.0%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-003	0.06266	1.761	0.312	14	0.4755	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.672	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.0004940662		0.0004940662		1	0.003926	0.9509	Non-Significant Effect		
Error	1.761766		0.1258404		14					
Total	1.76226				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.036	8.885	0.9637	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9438	0.8408	0.3986	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-003	8	1.191	0.8971	1.485	1.334	0.638	1.558	0.1243	29.52%	0.92%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-003	1.119	1.45	1.414	1.363	1.305	1.558	0.681	0.638		

CETIS Analytical Report

Report Date: 15 Jan-13 11:12 (p 21 of 22)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 18-3541-1619 Analyzed: 15 Jan-13 11:09			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-002	12-7608-5227	12 Nov-12 12:17	17 Nov-12 13:05	25d						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-002	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18H; 22800-002						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	28.2%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-002	0.03304	1.782	0.339	12	0.4871	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.804	2.507	0.7992	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.0001352673		0.0001352673		1	0.001091	0.9742	Non-Significant Effect		
Error	1.487278		0.1239398		12					
Total	1.487414				13					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.084	14.2	0.9629	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9422	0.8239	0.4471	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-002	6	1.196	0.8351	1.557	1.095	0.8	1.806	0.1403	28.74%	0.52%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-002	1.806	1.333	1.096	1.095	1.045	0.8				

CETIS Analytical Report

Report Date: 15 Jan-13 11:12 (p 22 of 22)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 11-9567-8662 Analyzed: 15 Jan-13 11:09			Endpoint: Mean AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-001	16-4551-8127	12 Nov-12 10:13	17 Nov-12 13:05	25d 2h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-001	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18I; 22800-001						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	25.9%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-001	0.8398	1.771	0.312	13	0.2081	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.748	2.548	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.08158498		0.08158498		1	0.7053	0.4162	Non-Significant Effect		
Error	1.50367		0.115667		13					
Total	1.585255				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.266	10.79	0.7897	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9498	0.8328	0.5220	Normal Distribution				
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.202	0.9029	1.501	1.162	0.725	1.775	0.1265	29.77%	0.0%
22800-001	7	1.054	0.7601	1.348	0.931	0.605	1.531	0.1202	30.17%	12.3%
Mean AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	0.896	1.482	1.251	1.775	0.725	1.073	0.934		
22800-001	1.319	0.931	1.23	0.605	1.531	0.847	0.917			

**CETIS Analytical Reports
Larvae Ash Free Biomass Comparisons**

**in support of the Ecological Risk Assessment for
Lower Passaic River Remedial Investigation
Purchase Order Number 2012-0042**

CETIS Analytical Report

Report Date: 07 Feb-13 16:31 (p 1 of 23)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.
Analysis ID:	19-3368-4870	Endpoint: Larvae AF Biomass-mg			CETIS Version:	CETISv1.8.6	
Analyzed:	29 Jan-13 12:25	Analysis: Parametric-Two Sample			Official Results:	Yes	
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project	
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse	
22800-001	16-4551-8127	12 Nov-12 10:13	17 Nov-12 13:05	25d 2h			
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000				
22800-001	Freshwater Sediment	Lower Passaic River Ecological R	UPRT18I; 22800-001				
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result	
Untransformed	NA	C > T	NA	NA	18.1%		
Equal Variance t Two-Sample Test							
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value
22800-000		22800-001	3.518	1.771	0.33	13	0.0019
					CDF	Significant Effect	
Auxiliary Tests							
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)	
Extreme Value	Grubbs Extreme Value		1.865	2.548	0.7341	No Outliers Detected	
ANOVA Table							
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)	
Between	1.601438	1.601438	1	12.38	0.0038	Significant Effect	
Error	1.68177	0.129367	13				
Total	3.283208		14				
Distributional Tests							
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)	
Variances	Variance Ratio F		1.069	9.155	0.9185	Equal Variances	
Distribution	Shapiro-Wilk W Normality		0.9582	0.8328	0.6605	Normal Distribution	
Larvae AF Biomass-mg Summary							
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47
22800-001	7	1.169	0.83	1.507	1.319	0.605	1.701
Std Err						CV%	%Effect
						19.42%	0.0%
						31.33%	35.92%
Larvae AF Biomass-mg Detail							
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533
22800-001	1.319	1.33	1.367	0.605	1.701	0.9411	0.917
Rep 8							

CETIS Analytical Report

Report Date: 07 Feb-13 16:31 (p 2 of 23)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID:	06-7112-9334	Endpoint:	Larvae AF Biomass-mg				CETIS Version: CETISv1.8.6			
Analyzed:	29 Jan-13 12:25	Analysis:	Parametric-Two Sample				Official Results: Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-002	12-7608-5227	12 Nov-12 12:17	17 Nov-12 13:05	25d						
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000							
22800-002	Freshwater Sediment	Lower Passaic River Ecological R	UPRT18H; 22800-002							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	17.8%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value			
22800-000		22800-002	2.262	1.782	0.325	12	0.0215			
					CDF	Decision($\alpha:5\%$)				
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.991	2.507	0.4506	No Outliers Detected				
ANOVA Table										
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)				
Between	0.5842824	0.5842824	1	5.115	0.0431	Significant Effect				
Error	1.370715	0.1142263	12							
Total	1.954998		13							
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.271	14.2	0.8189	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9638	0.8239	0.7842	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-002	6	1.411	1.081	1.74	1.449	0.8889	1.806	0.1282	22.26%	22.64%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-002	1.806	1.333	1.566	1.564	1.306	0.8889				

CETIS Analytical Report

Report Date: 07 Feb-13 16:31 (p 3 of 23)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 17-2039-6771 Analyzed: 29 Jan-13 12:25			Endpoint: Larvae AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-003	11-7795-6459	12 Nov-12 13:21	17 Nov-12 13:05	24d 23h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-003	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18J; 22800-003						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	18.7%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-003	2.38	1.761	0.341	14	0.0160	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.731	2.586	1.0000	No Outliers Detected				
ANOVA Table										
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)				
Between	0.8469364	0.8469364	1	5.665	0.0321	Significant Effect				
Error	2.093207	0.1495148	14							
Total	2.940144		15							
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.385	8.885	0.6781	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9557	0.8408	0.5851	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-003	8	1.363	1.015	1.712	1.407	0.7975	1.948	0.1473	30.57%	25.23%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-003	1.119	1.611	1.768	1.363	1.45	1.948	0.8512	0.7975		

CETIS Analytical Report

Report Date: 07 Feb-13 16:31 (p 4 of 23)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 13-1978-1417 Analyzed: 29 Jan-13 12:25			Endpoint: Larvae AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-004	08-4834-2931	12 Nov-12 14:37	17 Nov-12 13:05	24d 21h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-004	Freshwater Sediment	Lower Passaic River Ecological R		UPRT18K; 22800-004						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	14.1%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-004	3.941	1.771	0.257	13	0.0008	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.392	2.548	0.1084	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	1.222418		1.222418		1	15.53	0.0017	Significant Effect		
Error	1.023082		0.07869858		13					
Total	2.245499				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		5.171	10.79	0.0627	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8827	0.8328	0.0521	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-004	7	1.251	1.107	1.395	1.238	1.077	1.569	0.05885	12.44%	31.38%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-004	1.194	1.15	1.077	1.569	1.238	1.261	1.27			

CETIS Analytical Report

Report Date: 07 Feb-13 16:32 (p 5 of 23)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 03-5935-0679 Analyzed: 29 Jan-13 12:25			Endpoint: Larvae AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-006	15-2324-2159	13 Nov-12 09:46	17 Nov-12 13:05	24d 2h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-006	Freshwater Sediment	Lower Passaic River Ecological R		UPRT19K; 22800-006						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	16.5%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-006	3.81	1.761	0.300	14	0.0010	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.339	2.586	0.1575	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	1.688946		1.688946		1	14.51	0.0019	Significant Effect		
Error	1.629159		0.1163685		14					
Total	3.318106				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.168	8.885	0.8432	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.971	0.8408	0.8550	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-006	8	1.174	0.8998	1.448	1.292	0.403	1.431	0.1158	27.92%	35.63%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-006	1.332	1.362	1.431	0.403	1.282	1.301	1.126	1.152		

CETIS Analytical Report

Report Date: 07 Feb-13 16:32 (p 6 of 23)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.
Analysis ID:	07-7288-2579	Endpoint:	Larvae AF Biomass-mg				CETIS Version: CETISv1.8.6
Analyzed:	29 Jan-13 12:25	Analysis:	Parametric-Two Sample				Official Results: Yes
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project	
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse	
22800-007	04-8067-7422	13 Nov-12 10:55	17 Nov-12 13:05	24d 1h			
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000				
22800-007	Freshwater Sediment	Lower Passaic River Ecological R	UPRT19L; 22800-007				
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result	
Untransformed	NA	C > T	NA	NA	16.3%		
Equal Variance t Two-Sample Test							
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value
22800-000		22800-007	3.384	1.771	0.297	13	0.0024
					CDF	Decision($\alpha:5\%$)	
Auxiliary Tests							
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)	
Extreme Value	Grubbs Extreme Value		2.073	2.548	0.3811	No Outliers Detected	
ANOVA Table							
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)	
Between	1.199484	1.199484	1	11.45	0.0049	Significant Effect	
Error	1.361556	0.1047351	13				
Total	2.56104		14				
Distributional Tests							
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)	
Variances	Variance Ratio F		1.554	10.79	0.6073	Equal Variances	
Distribution	Shapiro-Wilk W Normality		0.939	0.8328	0.3700	Normal Distribution	
Larvae AF Biomass-mg Summary							
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47
22800-007	7	1.257	0.994	1.519	1.242	0.8222	1.61
Std Err						CV%	%Effect
						19.42%	0.0%
						22.6%	31.08%
Larvae AF Biomass-mg Detail							
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533
22800-007	1.591	1.242	1.61	1.051	1.328	0.8222	1.153
Rep 8							

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID:	20-3304-8186	Endpoint:	Larvae AF Biomass-mg				CETIS Version: CETISv1.8.6			
Analyzed:	29 Jan-13 12:25	Analysis:	Parametric-Two Sample				Official Results: Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-008	11-9606-6366	13 Nov-12 11:59	17 Nov-12 13:05	24d 0h						
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000							
22800-008	Freshwater Sediment	Lower Passaic River Ecological R	UPRT19M; 22800-008							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	14.1%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value			
22800-000		22800-008	3.337	1.771	0.257	13	0.0027			
					CDF	Decision($\alpha:5\%$)				
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.397	2.548	0.1058	No Outliers Detected				
ANOVA Table										
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)				
Between	0.8724005	0.8724005	1	11.13	0.0054	Significant Effect				
Error	1.018525	0.07834812	13							
Total	1.890926		14							
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		5.338	10.79	0.0583	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9131	0.8328	0.1509	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-008	7	1.34	1.198	1.482	1.354	1.05	1.534	0.05793	11.44%	26.51%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-008	1.397	1.442	1.334	1.354	1.534	1.269	1.05			

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 04-6692-5643 Analyzed: 29 Jan-13 12:26			Endpoint: Larvae AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-009	08-6088-6776	13 Nov-12 13:30	17 Nov-12 13:05	23d 22h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-009	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20A; 22800-009						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	16.3%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-009	2.651	1.761	0.296	14	0.0095	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.988	2.586	0.5540	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.7961854		0.7961854		1	7.029	0.0190	Significant Effect		
Error	1.585813		0.1132723		14					
Total	2.381998				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.239	8.885	0.7845	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9046	0.8408	0.0951	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-009	8	1.377	1.111	1.643	1.317	0.976	1.861	0.1125	23.09%	24.47%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-009	1.504	1.777	1.202	1.064	1.861	1.29	0.976	1.344		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 00-1446-8969 Analyzed: 29 Jan-13 12:26			Endpoint: Larvae AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-010	00-6504-4240	13 Nov-12 14:41	17 Nov-12 13:05	23d 21h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-010	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20B; 22800-010						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	19.2%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-010	1.744	1.761	0.350	14	0.0515	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.936	2.586	0.6502	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.4806636		0.4806636		1	3.041	0.1031	Non-Significant Effect		
Error	2.212608		0.1580434		14					
Total	2.693271				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.521	8.885	0.5936	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9522	0.8408	0.5249	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-010	8	1.477	1.112	1.842	1.517	0.7333	2.064	0.1544	29.57%	19.01%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-010	1.18	1.31	0.7333	1.844	1.731	2.064	1.724	1.229		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 14-9785-9727 Analyzed: 29 Jan-13 12:26			Endpoint: Larvae AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-011	06-7617-7021	14 Nov-12 08:15	17 Nov-12 13:05	23d 4h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-011	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20C; 22800-011						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	17.9%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-011	1.525	1.782	0.326	12	0.0766	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.987	2.507	0.4563	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.2665538		0.2665538		1	2.325	0.1533	Non-Significant Effect		
Error	1.375986		0.1146655		12					
Total	1.64254				13					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.258	14.2	0.8284	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9442	0.8239	0.4747	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-011	6	1.545	1.213	1.876	1.544	1.048	2.016	0.1289	20.44%	15.29%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-011	1.456	1.66	2.016	1.048	1.607	1.482				

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 01-4501-5962 Analyzed: 29 Jan-13 12:26			Endpoint: Larvae AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-012	08-8087-7260	14 Nov-12 09:14	17 Nov-12 13:05	23d 3h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-012	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20D; 22800-012						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	16.1%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-012	3.957	1.761	0.293	14	0.0007	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.009	2.586	0.5190	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	1.737393		1.737393		1	15.66	0.0014	Significant Effect		
Error	1.553175		0.1109411		14					
Total	3.290568				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.299	8.885	0.7387	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9649	0.8408	0.7506	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-012	8	1.164	0.9047	1.424	1.23	0.689	1.558	0.1098	26.68%	36.14%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-012	0.738	1.558	1.128	1.224	1.236	1.464	0.689	1.279		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 03-5644-1007 Analyzed: 29 Jan-13 12:26			Endpoint: Larvae AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-013	13-4098-0624	14 Nov-12 11:12	17 Nov-12 13:05	23d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-013	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20E; 22800-013						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	16.5%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-013	2.747	1.761	0.301	14	0.0079	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.961	2.586	0.6023	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.8782576		0.8782576		1	7.543	0.0158	Significant Effect		
Error	1.62998		0.1164271		14					
Total	2.508237				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.166	8.885	0.8443	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.941	0.8408	0.3620	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-013	8	1.355	1.081	1.629	1.349	0.92	1.764	0.1159	24.2%	25.7%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-013	1.233	1.764	1.232	0.937	1.567	1.721	1.466	0.92		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 20-5539-5434 Analyzed: 29 Jan-13 12:26			Endpoint: Larvae AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-014	12-2328-2385	14 Nov-12 11:49	17 Nov-12 13:05	23d 0h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-014	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20F; 22800-014						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	18.0%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-014	6.311	1.771	0.329	13	<0.0001	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.127	2.548	0.3156	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	5.134124		5.134124		1	39.83	<0.0001	Significant Effect		
Error	1.675825		0.1289096		13					
Total	6.809949				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.061	9.155	0.9258	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8746	0.8328	0.0394	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-014	7	0.6508	0.3135	0.9881	0.623	0.18	1.387	0.1379	56.04%	64.31%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-014	1.387	0.544	0.623	0.649	0.18	0.672	0.501			

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Report Date: 07 Feb-13 16:32 (p 14 of 23)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 11-3356-9797 Analyzed: 29 Jan-13 12:26			Endpoint: Larvae AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-015	07-6377-7783	14 Nov-12 12:52	17 Nov-12 13:05	22d 23h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-015	Freshwater Sediment	Lower Passaic River Ecological R		UPRT20G; 22800-015						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	19.4%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-015	1.667	1.771	0.353	13	0.0597	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.334	2.548	0.1397	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.4128357		0.4128357		1	2.779	0.1194	Non-Significant Effect		
Error	1.931276		0.1485597		13					
Total	2.344112				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.401	9.155	0.6646	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9664	0.8328	0.8016	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-015	7	1.491	1.103	1.879	1.568	0.624	1.86	0.1584	28.11%	18.24%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-015	0.624	1.48	1.737	1.568	1.86	1.787	1.381			

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Report Date: 07 Feb-13 16:32 (p 15 of 23)
 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 11-8697-2464 Analyzed: 29 Jan-13 12:26			Endpoint: Larvae AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-016	12-7040-7515	14 Nov-12 13:52	17 Nov-12 13:05	22d 22h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-016	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21A; 22800-016						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	16.8%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-016	2.227	1.761	0.307	14	0.0214	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.919	2.586	0.6831	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.6028177		0.6028177		1	4.959	0.0429	Significant Effect		
Error	1.701851		0.1215608		14					
Total	2.304669				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.065	8.885	0.9362	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8902	0.8408	0.0561	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-016	8	1.435	1.148	1.722	1.325	1.048	2.043	0.1213	23.91%	21.29%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-016	1.261	2.043	1.686	1.353	1.048	1.7	1.094	1.298		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 12-0400-0533 Analyzed: 29 Jan-13 12:26			Endpoint: Larvae AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-017	03-2230-4522	15 Nov-12 08:19	17 Nov-12 13:05	22d 4h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-017	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21B; 22800-017						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	20.1%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-017	0.8101	1.771	0.366	13	0.2162	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.142	2.548	0.2993	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.1046086		0.1046086		1	0.6563	0.4324	Non-Significant Effect		
Error	2.072074		0.1593903		13					
Total	2.176682				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.588	9.155	0.5572	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.935	0.8328	0.3236	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-017	7	1.656	1.243	2.069	1.637	1.084	2.48	0.1686	26.94%	9.18%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-017	1.261	1.084	1.588	1.743	1.637	2.48	1.799			

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 04-6314-4594 Analyzed: 29 Jan-13 12:26			Endpoint: Larvae AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-018	09-1843-1107	15 Nov-12 09:17	17 Nov-12 13:05	22d 3h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-018	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21C; 22800-018						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	17.4%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-018	3.265	1.771	0.317	13	0.0031	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.943	2.548	0.5823	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	1.271353		1.271353		1	10.66	0.0061	Significant Effect		
Error	1.550409		0.1192622		13					
Total	2.821761				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.118	10.79	0.9079	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8587	0.8328	0.0231	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-018	7	1.24	0.9302	1.55	1.074	0.928	1.867	0.1266	27.01%	32.0%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-018	0.966	0.928	1.384	1.058	1.867	1.403	1.074			

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 15-1555-0388 Analyzed: 29 Jan-13 12:26			Endpoint: Larvae AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-019	07-8610-6905	15 Nov-12 10:08	17 Nov-12 13:05	22d 2h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-019	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21D; 22800-019						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	14.7%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-019	3.366	1.771	0.268	13	0.0025	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.291	2.548	0.1677	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.9719307		0.9719307		1	11.33	0.0051	Significant Effect		
Error	1.114882		0.08576018		13					
Total	2.086813				14					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		3.17	10.79	0.1810	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9243	0.8328	0.2241	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-019	7	1.313	1.129	1.497	1.346	1.037	1.606	0.07516	15.14%	27.98%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-019	1.248	1.606	1.466	1.037	1.381	1.109	1.346			

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 19-6738-2704 Analyzed: 29 Jan-13 12:26			Endpoint: Larvae AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-020	07-2784-0432	15 Nov-12 10:52	17 Nov-12 13:05	22d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-020	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21E; 22800-020						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	18.9%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-020	2.687	1.761	0.344	14	0.0088	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		1.956	2.586	0.6114	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	1.102474		1.102474		1	7.22	0.0177	Significant Effect		
Error	2.137624		0.1526875		14					
Total	3.240098				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.436	8.885	0.6451	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9837	0.8408	0.9861	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-020	8	1.299	0.9438	1.653	1.375	0.56	1.803	0.15	32.67%	28.79%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-020	1.32	1.803	0.56	1.258	1.43	1.612	1.605	0.8		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 03-9128-0906 Analyzed: 29 Jan-13 12:27			Endpoint: Larvae AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-021	09-5811-7655	15 Nov-12 11:29	17 Nov-12 13:05	22d 1h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-021	Freshwater Sediment	Lower Passaic River Ecological R		UPRT21F; 22800-021						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	17.4%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-021	-0.2326	1.761	0.317	14	0.5903	CDF	Non-Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.086	2.586	0.4041	No Outliers Detected				
ANOVA Table										
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)				
Between	0.007021654	0.007021654	1	0.05409	0.8195	Non-Significant Effect				
Error	1.81734	0.12981	14							
Total	1.824362		15							
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		1.071	8.885	0.9304	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.8546	0.8408	0.0159	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-021	8	1.865	1.559	2.172	1.728	1.516	2.591	0.1295	19.64%	-2.3%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-021	1.516	1.721	1.734	2.187	1.599	2.591	1.969	1.606		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID:	05-6046-7862	Endpoint:	Larvae AF Biomass-mg				CETIS Version: CETISv1.8.6			
Analyzed:	29 Jan-13 12:27	Analysis:	Parametric-Two Sample		Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-022	08-0539-1503	15 Nov-12 12:25	17 Nov-12 13:05	22d						
Sample Code	Material Type	Sample Source	Station Location			Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R	Lab Control; 22800-000							
22800-022	Freshwater Sediment	Lower Passaic River Ecological R	UPRT21G; 22800-022							
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	18.5%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-022	2.814	1.771	0.337	13	0.0073	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision($\alpha:5\%$)			
Extreme Value	Grubbs Extreme Value			1.976	2.548	0.5239	No Outliers Detected			
ANOVA Table										
Source	Sum Squares	Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)			
Between	1.071476	1.071476		1	7.919	0.0146	Significant Effect			
Error	1.758885	0.1352989		13						
Total	2.830361			14						
Distributional Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision($\alpha:1\%$)			
Variances	Variance Ratio F			1.172	9.155	0.8302	Equal Variances			
Distribution	Shapiro-Wilk W Normality			0.9271	0.8328	0.2467	Normal Distribution			
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-022	7	1.288	0.9333	1.642	1.316	0.712	1.988	0.1449	29.76%	29.38%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-022	1.334	1.163	0.712	1.316	1.988	1.388	1.113			

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 13-7617-7634 Analyzed: 29 Jan-13 12:27			Endpoint: Larvae AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-023	04-1666-1117	16 Nov-12 08:06	17 Nov-12 13:05	21d 4h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-023	Freshwater Sediment	Lower Passaic River Ecological R		UPRT22A; 22800-023						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	14.4%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-023	4.437	1.761	0.262	14	0.0003	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.247	2.586	0.2267	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	1.746277		1.746277		1	19.69	0.0006	Significant Effect		
Error	1.241745		0.0886961		14					
Total	2.988022				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.41	8.885	0.2686	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9641	0.8408	0.7369	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-023	8	1.163	0.9721	1.353	1.161	0.6929	1.413	0.08064	19.62%	36.23%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-023	1.173	1.149	1.373	1.322	1.082	1.413	0.6929	1.097		

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 Test Code: 22800Cd | 03-8637-2377

Chironomus 10-d Survival and Growth Sediment Test							EnviroSystems, Inc.			
Analysis ID: 08-9108-6991 Analyzed: 29 Jan-13 12:27			Endpoint: Larvae AF Biomass-mg Analysis: Parametric-Two Sample			CETIS Version: CETISv1.8.6 Official Results: Yes				
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project				
22800-000	02-2935-5787	28 Nov-12 12:00	28 Nov-12 12:00	9d 0h	Windward Environmental	Ecological Risk Asse				
22800-024	09-8169-6091	16 Nov-12 09:09	17 Nov-12 13:05	21d 3h						
Sample Code	Material Type	Sample Source		Station Location		Latitude	Longitude			
22800-000	Laboratory Control S	Lower Passaic River Ecological R		Lab Control; 22800-000						
22800-024	Freshwater Sediment	Lower Passaic River Ecological R		UPRT22B; 22800-024						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result				
Untransformed	NA	C > T	NA	NA	14.1%					
Equal Variance t Two-Sample Test										
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision($\alpha:5\%$)	
22800-000		22800-024	3.212	1.761	0.256	14	0.0031	CDF	Significant Effect	
Auxiliary Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value	Grubbs Extreme Value		2.298	2.586	0.1855	No Outliers Detected				
ANOVA Table										
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision($\alpha:5\%$)		
Between	0.8746254		0.8746254		1	10.32	0.0063	Significant Effect		
Error	1.186894		0.08477812		14					
Total	2.061519				15					
Distributional Tests										
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F		2.837	8.885	0.1922	Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.9389	0.8408	0.3358	Normal Distribution				
Larvae AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
22800-000	8	1.824	1.527	2.12	1.748	1.481	2.47	0.1252	19.42%	0.0%
22800-024	8	1.356	1.18	1.532	1.352	0.9789	1.641	0.07432	15.5%	25.64%
Larvae AF Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
22800-000	1.481	2.24	2.47	1.72	1.775	1.813	1.533	1.557		
22800-024	0.9789	1.594	1.29	1.215	1.424	1.34	1.641	1.364		

STUDY: 22802**CLIENT: Windward Environmental, LLC.****PROJECT: Lower Passaic River Remedial Investigation****ASSAY: Chironomus dilutus 10 Day Sediment Assay****TASK: Overlying Water Alkalinity Summary****METHOD: EPA 310.2**

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-000	Lab Control	000	0	22802-100	Water	61	2	mg/L	12/07/12 0845	12/20/12 1338
22800-001	UPRT18I	001	0	22802-101	Water	42	2	mg/L	12/07/12 0845	12/20/12 1339
22800-002	UPRT18H	002	0	22802-102	Water	46	2	mg/L	12/07/12 0845	12/20/12 1340
22800-003	UPRT18J	003	0	22802-103	Water	38	2	mg/L	12/07/12 0845	12/20/12 1342
22800-004	UPRT18K	004	0	22802-104	Water	46	2	mg/L	12/07/12 0845	12/20/12 1343
22800-005	UPRT19J	005	0	22802-105	Water	36	2	mg/L	12/07/12 0845	12/20/12 1344
22800-006	UPRT19K	006	0	22802-106	Water	49	2	mg/L	12/07/12 0845	12/20/12 1349
22800-007	UPRT19L	007	0	22802-107	Water	45	2	mg/L	12/07/12 0845	12/20/12 1350
22800-008	UPRT19M	008	0	22802-108	Water	42	2	mg/L	12/07/12 0845	12/20/12 1356
22800-009	UPRT20A	009	0	22802-109	Water	49	2	mg/L	12/07/12 0845	12/20/12 1400
22800-010	UPRT20B	010	0	22802-110	Water	60	2	mg/L	12/07/12 0845	12/20/12 1401
22800-011	UPRT20C	011	0	22802-111	Water	65	2	mg/L	12/07/12 0845	12/20/12 1405
22800-012	UPRT20D	012	0	22802-112	Water	55	2	mg/L	12/07/12 0845	12/20/12 1407
22800-013	UPRT20E	013	0	22802-113	Water	43	2	mg/L	12/07/12 0845	12/20/12 1408
22800-014	UPRT20F	014	0	22802-114	Water	31	2	mg/L	12/07/12 0845	12/20/12 1409
22800-015	UPRT20G	015	0	22802-115	Water	55	2	mg/L	12/07/12 0845	12/20/12 1411
22800-016	UPRT21A	016	0	22802-116	Water	51	2	mg/L	12/07/12 0845	12/20/12 1412
22800-017	UPRT21B	017	0	22802-117	Water	94	2	mg/L	12/07/12 0845	12/20/12 1413
22800-018	UPRT21C	018	0	22802-118	Water	69	2	mg/L	12/07/12 0845	12/20/12 1415
22800-019	UPRT21D	019	0	22802-119	Water	61	2	mg/L	12/07/12 0845	12/20/12 1416
22800-020	UPRT21E	020	0	22802-120	Water	54	2	mg/L	12/07/12 0845	12/20/12 1417
22800-021	UPRT21F	021	0	22802-121	Water	53	2	mg/L	12/07/12 0845	12/20/12 1422
22800-022	UPRT21G	022	0	22802-122	Water	45	2	mg/L	12/07/12 0845	12/20/12 1423
22800-023	UPRT22A	023	0	22802-123	Water	48	2	mg/L	12/07/12 0845	12/20/12 1424
22800-024	UPRT22B	024	0	22802-124	Water	72	2	mg/L	12/07/12 0845	12/20/12 1426
22800-000	Lab Control	000	10	22802-200	Water	56	2	mg/L	12/17/12 0845	12/26/12 1117
22800-001	UPRT18I	001	10	22802-201	Water	48	2	mg/L	12/17/12 0845	12/26/12 1118
22800-002	UPRT18H	002	10	22802-202	Water	47	2	mg/L	12/17/12 0845	12/26/12 1119
22800-003	UPRT18J	003	10	22802-203	Water	47	2	mg/L	12/17/12 0845	12/26/12 1121
22800-004	UPRT18K	004	10	22802-204	Water	48	2	mg/L	12/17/12 0845	12/26/12 1122
22800-005	UPRT19J	005	10	22802-205	Water	53	2	mg/L	12/17/12 0845	12/26/12 1123

TASK: Overlying Water Alkalinity Summary
METHOD: EPA 310.2

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-006	UPRT19K	006	10	22802-206	Water	44	2	mg/L	12/17/12 0845	12/26/12 1125
22800-007	UPRT19L	007	10	22802-207	Water	46	2	mg/L	12/17/12 0845	12/26/12 1126
22800-008	UPRT19M	008	10	22802-208	Water	46	2	mg/L	12/17/12 0845	12/26/12 1127
22800-009	UPRT20A	009	10	22802-209	Water	47	2	mg/L	12/17/12 0845	12/26/12 1129
22800-010	UPRT20B	010	10	22802-210	Water	49	2	mg/L	12/17/12 0845	12/26/12 1133
22800-011	UPRT20C	011	10	22802-211	Water	59	2	mg/L	12/17/12 0845	12/26/12 1134
22800-012	UPRT20D	012	10	22802-212	Water	50	2	mg/L	12/17/12 0845	12/26/12 1136
22800-013	UPRT20E	013	10	22802-213	Water	45	2	mg/L	12/17/12 0845	12/26/12 1137
22800-014	UPRT20F	014	10	22802-214	Water	46	2	mg/L	12/17/12 0845	12/26/12 1142
22800-015	UPRT20G	015	10	22802-215	Water	51	2	mg/L	12/17/12 0845	12/26/12 1149
22800-016	UPRT21A	016	10	22802-216	Water	50	2	mg/L	12/17/12 0845	12/26/12 1151
22800-017	UPRT21B	017	10	22802-217	Water	60	2	mg/L	12/17/12 0845	12/26/12 1152
22800-018	UPRT21C	018	10	22802-218	Water	56	2	mg/L	12/17/12 0845	12/26/12 1153
22800-019	UPRT21D	019	10	22802-219	Water	52	2	mg/L	12/17/12 0845	12/26/12 1155
22800-020	UPRT21E	020	10	22802-220	Water	50	2	mg/L	12/17/12 0845	12/26/12 1156
22800-021	UPRT21F	021	10	22802-221	Water	45	2	mg/L	12/17/12 0845	12/26/12 1157
22800-022	UPRT21G	022	10	22802-222	Water	48	2	mg/L	12/17/12 0845	12/26/12 1159
22800-023	UPRT22A	023	10	22802-223	Water	48	2	mg/L	12/17/12 0845	12/26/12 1200
22800-024	UPRT22B	024	10	22802-224	Water	50	2	mg/L	12/17/12 0845	12/26/12 1201

STUDY: 22802**CLIENT: Windward Environmental, LLC.****PROJECT: Lower Passaic River Remedial Investigation****ASSAY: Chironomus dilutus 10 Day Sediment Assay****TASK: Overlying Water Hardness Summary****METHOD: SW846 3rd Ed. 6020**

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-000	Lab Control	000	0	22802-125	Water	89	0.4	mg/L	12/07/12 0845	12/19/12
22800-001	UPRT18I	001	0	22802-126	Water	82	0.4	mg/L	12/07/12 0845	12/19/12
22800-002	UPRT18H	002	0	22802-127	Water	80	0.4	mg/L	12/07/12 0845	12/19/12
22800-003	UPRT18J	003	0	22802-128	Water	84	0.4	mg/L	12/07/12 0845	12/19/12
22800-004	UPRT18K	004	0	22802-129	Water	75	0.4	mg/L	12/07/12 0845	12/19/12
22800-005	UPRT19J	005	0	22802-130	Water	79	0.4	mg/L	12/07/12 0845	12/19/12
22800-006	UPRT19K	006	0	22802-131	Water	78	0.4	mg/L	12/07/12 0845	12/19/12
22800-007	UPRT19L	007	0	22802-132	Water	84	0.4	mg/L	12/07/12 0845	12/19/12
22800-008	UPRT19M	008	0	22802-133	Water	82	0.4	mg/L	12/07/12 0845	12/19/12
22800-009	UPRT20A	009	0	22802-134	Water	73	0.4	mg/L	12/07/12 0845	12/19/12
22800-010	UPRT20B	010	0	22802-135	Water	83	0.4	mg/L	12/07/12 0845	12/19/12
22800-011	UPRT20C	011	0	22802-136	Water	87	0.4	mg/L	12/07/12 0845	12/19/12
22800-012	UPRT20D	012	0	22802-137	Water	82	0.4	mg/L	12/07/12 0845	12/19/12
22800-013	UPRT20E	013	0	22802-138	Water	83	0.4	mg/L	12/07/12 0845	12/19/12
22800-014	UPRT20F	014	0	22802-139	Water	86	0.4	mg/L	12/07/12 0845	12/19/12
22800-015	UPRT20G	015	0	22802-140	Water	79	0.4	mg/L	12/07/12 0845	12/19/12
22800-016	UPRT21A	016	0	22802-141	Water	86	0.4	mg/L	12/07/12 0845	12/19/12
22800-017	UPRT21B	017	0	22802-142	Water	87	0.4	mg/L	12/07/12 0845	12/19/12
22800-018	UPRT21C	018	0	22802-143	Water	100	0.4	mg/L	12/07/12 0845	12/19/12
22800-019	UPRT21D	019	0	22802-144	Water	94	0.4	mg/L	12/07/12 0845	12/19/12
22800-020	UPRT21E	020	0	22802-145	Water	92	0.4	mg/L	12/07/12 0845	12/19/12
22800-021	UPRT21F	021	0	22802-146	Water	75	0.4	mg/L	12/07/12 0845	12/19/12
22800-022	UPRT21G	022	0	22802-147	Water	81	0.4	mg/L	12/07/12 0845	12/19/12
22800-023	UPRT22A	023	0	22802-148	Water	74	0.4	mg/L	12/07/12 0845	12/19/12
22800-024	UPRT22B	024	0	22802-149	Water	95	0.4	mg/L	12/07/12 0845	12/19/12
22800-000	Lab Control	000	10	22802-225	Water	80	0.4	mg/L	12/17/12 0845	12/20/12
22800-001	UPRT18I	001	10	22802-226	Water	81	0.4	mg/L	12/17/12 0845	12/20/12
22800-002	UPRT18H	002	10	22802-227	Water	71	0.4	mg/L	12/17/12 0845	12/20/12
22800-003	UPRT18J	003	10	22802-228	Water	75	0.4	mg/L	12/17/12 0845	12/20/12
22800-004	UPRT18K	004	10	22802-229	Water	85	0.4	mg/L	12/17/12 0845	12/20/12
22800-005	UPRT19J	005	10	22802-230	Water	78	0.4	mg/L	12/17/12 0845	12/20/12

TASK: Overlying Water Hardness Summary
METHOD: SW846 3rd Ed. 6020

Sample											
LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED	
22800-006	UPRT19K	006	10	22802-231	Water	78	0.4	mg/L	12/17/12 0845	12/20/12	
22800-007	UPRT19L	007	10	22802-232	Water	69	0.4	mg/L	12/17/12 0845	12/20/12	
22800-008	UPRT19M	008	10	22802-233	Water	74	0.4	mg/L	12/17/12 0845	12/20/12	
22800-009	UPRT20A	009	10	22802-234	Water	74	0.4	mg/L	12/17/12 0845	12/20/12	
22800-010	UPRT20B	010	10	22802-235	Water	71	0.4	mg/L	12/17/12 0845	12/20/12	
22800-011	UPRT20C	011	10	22802-236	Water	84	0.4	mg/L	12/17/12 0845	12/20/12	
22800-012	UPRT20D	012	10	22802-237	Water	77	0.4	mg/L	12/17/12 0845	12/20/12	
22800-013	UPRT20E	013	10	22802-238	Water	77	0.4	mg/L	12/17/12 0845	12/20/12	
22800-014	UPRT20F	014	10	22802-239	Water	72	0.4	mg/L	12/17/12 0845	12/20/12	
22800-015	UPRT20G	015	10	22802-240	Water	78	0.4	mg/L	12/17/12 0845	12/20/12	
22800-016	UPRT21A	016	10	22802-241	Water	74	0.4	mg/L	12/17/12 0845	12/20/12	
22800-017	UPRT21B	017	10	22802-242	Water	64	0.4	mg/L	12/17/12 0845	12/20/12	
22800-018	UPRT21C	018	10	22802-243	Water	80	0.4	mg/L	12/17/12 0845	12/20/12	
22800-019	UPRT21D	019	10	22802-244	Water	77	0.4	mg/L	12/17/12 0845	12/20/12	
22800-020	UPRT21E	020	10	22802-245	Water	70	0.4	mg/L	12/17/12 0845	12/20/12	
22800-021	UPRT21F	021	10	22802-246	Water	70	0.4	mg/L	12/17/12 0845	12/20/12	
22800-022	UPRT21G	022	10	22802-247	Water	73	0.4	mg/L	12/17/12 0845	12/20/12	
22800-023	UPRT22A	023	10	22802-248	Water	72	0.4	mg/L	12/17/12 0845	12/20/12	
22800-024	UPRT22B	024	10	22802-249	Water	74	0.4	mg/L	12/17/12 0845	12/20/12	

STUDY: 22802

CLIENT: Windward Environmental, LLC.

PROJECT: Lower Passaic River Remedial Investigation

ASSAY: Chironomus dilutus 10 Day Sediment Assay

TASK: Overlying Water Ammonia Summary

METHOD: SM 4500-NH3 G

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-000	Lab Control	000	0	22802-150	Water	0.15	0.1	mg/L as N	12/07/12 0845	12/18/12 1354
22800-001	UPRT18I	001	0	22802-151	Water	ND	0.1	mg/L as N	12/07/12 0845	12/18/12 1358
22800-002	UPRT18H	002	0	22802-152	Water	0.22	0.1	mg/L as N	12/07/12 0845	12/18/12 1401
22800-003	UPRT18J	003	0	22802-153	Water	0.2	0.1	mg/L as N	12/07/12 0845	12/18/12 1403
22800-004	UPRT18K	004	0	22802-154	Water	ND	0.1	mg/L as N	12/07/12 0845	12/18/12 1404
22800-005	UPRT19J	005	0	22802-155	Water	0.21	0.1	mg/L as N	12/07/12 0845	12/18/12 1405
22800-006	UPRT19K	006	0	22802-156	Water	0.2	0.1	mg/L as N	12/07/12 0845	12/18/12 1408
22800-007	UPRT19L	007	0	22802-157	Water	ND	0.1	mg/L as N	12/07/12 0845	12/18/12 1409
22800-008	UPRT19M	008	0	22802-158	Water	ND	0.1	mg/L as N	12/07/12 0845	12/18/12 1410
22800-009	UPRT20A	009	0	22802-159	Water	0.5	0.1	mg/L as N	12/07/12 0845	12/18/12 1411
22800-010	UPRT20B	010	0	22802-160	Water	ND	0.1	mg/L as N	12/07/12 0845	12/18/12 1412
22800-011	UPRT20C	011	0	22802-161	Water	2	0.1	mg/L as N	12/07/12 0845	12/18/12 1413
22800-012	UPRT20D	012	0	22802-162	Water	2.1	0.1	mg/L as N	12/07/12 0845	12/18/12 1413
22800-013	UPRT20E	013	0	22802-163	Water	ND	0.1	mg/L as N	12/07/12 0845	12/18/12 1414
22800-014	UPRT20F	014	0	22802-164	Water	2.6	0.1	mg/L as N	12/07/12 0845	12/18/12 1415
22800-015	UPRT20G	015	0	22802-165	Water	0.85	0.1	mg/L as N	12/07/12 0845	12/18/12 1416
22800-016	UPRT21A	016	0	22802-166	Water	0.37	0.1	mg/L as N	12/07/12 0845	12/18/12 1419
22800-017	UPRT21B	017	0	22802-167	Water	8.5	0.1	mg/L as N	12/07/12 0845	12/18/12 1420
22800-018	UPRT21C	018	0	22802-168	Water	1.1	0.1	mg/L as N	12/07/12 0845	12/18/12 1421
22800-019	UPRT21D	019	0	22802-169	Water	0.41	0.1	mg/L as N	12/07/12 0845	12/18/12 1422
22800-020	UPRT21E	020	0	22802-170	Water	ND	0.1	mg/L as N	12/07/12 0845	12/18/12 1423
22800-021	UPRT21F	021	0	22802-171	Water	0.98	0.1	mg/L as N	12/07/12 0845	12/18/12 1424
22800-022	UPRT21G	022	0	22802-172	Water	ND	0.1	mg/L as N	12/07/12 0845	01/02/13 1135
22800-023	UPRT22A	023	0	22802-173	Water	ND	0.1	mg/L as N	12/07/12 0845	01/02/13 1137
22800-024	UPRT22B	024	0	22802-174	Water	ND	0.1	mg/L as N	12/07/12 0845	01/02/13 1138
22800-000	Lab Control	000	10	22802-250	Water	ND	0.1	mg/L as N	12/17/12 0845	01/03/13 1403
22800-001	UPRT18I	001	10	22802-251	Water	0.16	0.1	mg/L as N	12/17/12 0845	01/03/13 1403
22800-002	UPRT18H	002	10	22802-252	Water	0.17	0.1	mg/L as N	12/17/12 0845	01/03/13 1404
22800-003	UPRT18J	003	10	22802-253	Water	ND	0.1	mg/L as N	12/17/12 0845	01/03/13 1410
22800-004	UPRT18K	004	10	22802-254	Water	ND	0.1	mg/L as N	12/17/12 0845	01/03/13 1413
22800-005	UPRT19J	005	10	22802-255	Water	0.58	0.1	mg/L as N	12/17/12 0845	01/03/13 1413

TASK: Overlying Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample											
LAB ID	Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED	
22800-006	UPRT19K	006	10	22802-256	Water	ND	0.1	mg/L as N	12/17/12 0845	01/03/13 1414	
22800-007	UPRT19L	007	10	22802-257	Water	0.18	0.1	mg/L as N	12/17/12 0845	01/03/13 1415	
22800-008	UPRT19M	008	10	22802-258	Water	ND	0.1	mg/L as N	12/17/12 0845	01/03/13 1416	
22800-009	UPRT20A	009	10	22802-259	Water	ND	0.1	mg/L as N	12/17/12 0845	01/03/13 1417	
22800-010	UPRT20B	010	10	22802-260	Water	0.12	0.1	mg/L as N	12/17/12 0845	01/03/13 1418	
22800-011	UPRT20C	011	10	22802-261	Water	ND	0.1	mg/L as N	12/17/12 0845	01/03/13 1421	
22800-012	UPRT20D	012	10	22802-262	Water	ND	0.1	mg/L as N	12/17/12 0845	01/03/13 1422	
22800-013	UPRT20E	013	10	22802-263	Water	ND	0.1	mg/L as N	12/17/12 0845	01/03/13 1423	
22800-014	UPRT20F	014	10	22802-264	Water	ND	0.1	mg/L as N	12/17/12 0845	01/03/13 1424	
22800-015	UPRT20G	015	10	22802-265	Water	ND	0.1	mg/L as N	12/17/12 0845	01/03/13 1424	
22800-016	UPRT21A	016	10	22802-266	Water	0.1	0.1	mg/L as N	12/17/12 0845	01/03/13 1425	
22800-017	UPRT21B	017	10	22802-267	Water	3	0.1	mg/L as N	12/17/12 0845	01/03/13 1426	
22800-018	UPRT21C	018	10	22802-268	Water	ND	0.1	mg/L as N	12/17/12 0845	01/03/13 1427	
22800-019	UPRT21D	019	10	22802-269	Water	ND	0.1	mg/L as N	12/17/12 0845	01/03/13 1428	
22800-020	UPRT21E	020	10	22802-270	Water	ND	0.1	mg/L as N	12/17/12 0845	01/03/13 1429	
22800-021	UPRT21F	021	10	22802-271	Water	ND	0.1	mg/L as N	12/17/12 0845	01/03/13 1432	
22800-022	UPRT21G	022	10	22802-272	Water	ND	0.1	mg/L as N	12/17/12 0845	01/03/13 1433	
22800-023	UPRT22A	023	10	22802-273	Water	ND	0.1	mg/L as N	12/17/12 0845	01/04/13 1227	
22800-024	UPRT22B	024	10	22802-274	Water	ND	0.1	mg/L as N	12/17/12 0845	01/04/13 1210	

STUDY: 22802**CLIENT: Windward Environmental, LLC.****PROJECT: Lower Passaic River Remedial Investigation****ASSAY: Chironomus dilutus 10 Day Sediment Assay****TASK: Pore Water Ammonia Summary****METHOD: SM 5310 C**

Sample LAB ID	Field ID	Sample Number	Day	LAB ID	Ammonia					
					Total	Unionized	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-000	Lab Control	000	0	22802-300	ND	0.0011	0.5	mg/L as N	12/07/12 1000	01/03/13 1450
22800-001	UPRT18I	001	0	22802-301	1.4	0.0023	0.5	mg/L as N	12/07/12 1000	01/03/13 1450
22800-002	UPRT18H	002	0	22802-302	2.3	0.0088	0.5	mg/L as N	12/07/12 1000	01/03/13 1454
22800-003	UPRT18J	003	0	22802-303	3.4	0.0088	0.5	mg/L as N	12/07/12 1000	01/03/13 1455
22800-004	UPRT18K	004	0	22802-304	0.82	0.0022	0.5	mg/L as N	12/07/12 1000	01/03/13 1456
22800-005	UPRT19J	005	0	22802-305	3.7	0.0152	0.5	mg/L as N	12/07/12 1000	01/03/13 1456
22800-006	UPRT19K	006	0	22802-306	3.7	0.0145	0.5	mg/L as N	12/07/12 1000	01/03/13 1457
22800-007	UPRT19L	007	0	22802-307	1	0.0041	0.5	mg/L as N	12/07/12 1000	01/03/13 1458
22800-008	UPRT19M	008	0	22802-308	0.55	0.0035	0.5	mg/L as N	12/07/12 1000	01/03/13 1459
22800-009	UPRT20A	009	0	22802-309	5.8	0.0368	0.5	mg/L as N	12/07/12 1000	01/03/13 1505
22800-010	UPRT20B	010	0	22802-310	3.3	0.0196	0.5	mg/L as N	12/07/12 1000	01/03/13 1507
22800-011	UPRT20C	011	0	22802-311	13	0.0599	0.5	mg/L as N	12/07/12 1000	01/03/13 1508
22800-012	UPRT20D	012	0	22802-312	6.8	0.0299	0.5	mg/L as N	12/07/12 1000	01/03/13 1509
22800-013	UPRT20E	013	0	22802-313	1.4	0.0180	0.5	mg/L as N	12/07/12 1000	01/03/13 1510
22800-014	UPRT20F	014	0	22802-314	9.5	0.0409	0.5	mg/L as N	12/07/12 1000	01/03/13 1511
22800-015	UPRT20G	015	0	22802-315	6.4	0.0397	0.5	mg/L as N	12/07/12 1000	01/03/13 1512
22800-016	UPRT21A	016	0	22802-316	1.5	0.0333	0.5	mg/L as N	12/07/12 1000	01/03/13 1512
22800-017	UPRT21B	017	0	22802-317	26	0.1021	0.5	mg/L as N	12/07/12 1000	01/03/13 1516
22800-018	UPRT21C	018	0	22802-318	9	0.0787	0.5	mg/L as N	12/07/12 1000	01/03/13 1516
22800-019	UPRT21D	019	0	22802-319	6	0.0809	0.5	mg/L as N	12/07/12 1000	01/03/13 1517
22800-020	UPRT21E	020	0	22802-320	0.71	0.0115	0.5	mg/L as N	12/07/12 1000	01/03/13 1518
22800-021	UPRT21F	021	0	22802-321	7.3	0.0423	0.5	mg/L as N	12/07/12 1000	01/03/13 1519
22800-022	UPRT21G	022	0	22802-322	0.89	0.0123	0.5	mg/L as N	12/07/12 1000	01/03/13 1520
22800-023	UPRT22A	023	0	22802-323	ND	0.0043	0.5	mg/L as N	12/07/12 1000	01/03/13 1520
22800-024	UPRT22B	024	0	22802-324	0.87	0.0172	0.5	mg/L as N	12/07/12 1000	01/03/13 1521
22800-000	Lab Control	000	10	22802-400	ND	0.0004	0.5	mg/L as N	12/17/12 0900	01/04/13 1135
22800-001	UPRT18I	001	10	22802-401	0.79	0.0020	0.5	mg/L as N	12/17/12 0900	01/04/13 1138
22800-002	UPRT18H	002	10	22802-402	0.88	0.0025	0.5	mg/L as N	12/17/12 0900	01/04/13 1139
22800-003	UPRT18J	003	10	22802-403	0.75	0.0022	0.5	mg/L as N	12/17/12 0900	01/04/13 1142
22800-004	UPRT18K	004	10	22802-404	0.86	0.0027	0.5	mg/L as N	12/17/12 0900	01/04/13 1143
22800-005	UPRT19J	005	10	22802-405	4.7	0.0098	0.5	mg/L as N	12/17/12 0900	01/04/13 1144
22800-006	UPRT19K	006	10	22802-406	0.89	0.0026	0.5	mg/L as N	12/17/12 0900	01/04/13 1145

TASK: Pore Water Ammonia Summary
METHOD: SM 5310 C

Sample LAB ID	Field ID	Sample Number	Day	Ammonia				UNITS	SAMPLED	ANALYZED
				LAB ID	Total	Unionized	QLIMIT			
22800-007	UPRT19L	007	10	22802-407	0.73	0.0023	0.5	mg/L as N	12/17/12 0900	01/04/13 1146
22800-008	UPRT19M	008	10	22802-408	ND	0.0008	0.5	mg/L as N	12/17/12 0900	01/04/13 1146
22800-009	UPRT20A	009	10	22802-409	0.94	0.0032	0.5	mg/L as N	12/17/12 0900	01/04/13 1147
22800-010	UPRT20B	010	10	22802-410	3.1	0.0103	0.5	mg/L as N	12/17/12 0900	01/04/13 1148
22800-011	UPRT20C	011	10	22802-411	2.4	0.0078	0.5	mg/L as N	12/17/12 0900	01/04/13 1149
22800-012	UPRT20D	012	10	22802-412	1.1	0.0036	0.5	mg/L as N	12/17/12 0900	01/04/13 1150
22800-013	UPRT20E	013	10	22802-413	ND	0.0010	0.5	mg/L as N	12/17/12 0900	01/04/13 1153
22800-014	UPRT20F	014	10	22802-414	3.3	0.0083	0.5	mg/L as N	12/17/12 0900	01/04/13 1154
22800-015	UPRT20G	015	10	22802-415	1.5	0.0052	0.5	mg/L as N	12/17/12 0900	01/04/13 1155
22800-016	UPRT21A	016	10	22802-416	ND	0.0011	0.5	mg/L as N	12/17/12 0900	01/04/13 1156
22800-017	UPRT21B	017	10	22802-417	4.8	0.0191	0.5	mg/L as N	12/17/12 0900	01/04/13 1156
22800-018	UPRT21C	018	10	22802-418	1.1	0.0048	0.5	mg/L as N	12/17/12 0900	01/04/13 1157
22800-019	UPRT21D	019	10	22802-419	1.1	0.0058	0.5	mg/L as N	12/17/12 0900	01/04/13 1158
22800-020	UPRT21E	020	10	22802-420	0.56	0.0037	0.5	mg/L as N	12/17/12 0900	01/04/13 1204
22800-021	UPRT21F	021	10	22802-421	2	0.0098	0.5	mg/L as N	12/17/12 0900	01/04/13 1207
22800-022	UPRT21G	022	10	22802-422	ND	0.0014	0.5	mg/L as N	12/17/12 0900	01/04/13 1207
22800-023	UPRT22A	023	10	22802-423	ND	0.0015	0.5	mg/L as N	12/17/12 0900	01/04/13 1208
22800-024	UPRT22B	024	10	22802-424	ND	0.0017	0.5	mg/L as N	12/17/12 0900	01/04/13 1209

**Sample Pore Water Analysis
Day 0**

Study: 22802

Client: Windward Environmental, LLC

Project: Lower Passaic River Remedial
Investigation

Field ID	Receipt Number	Sample Number	pH (SU)	temperature (°C)
Lab Control	22800-000	000	7.06	20
UPRT18I	22800-001	001	6.65	19
UPRT18H	22800-002	002	7.02	
UPRT18J	22800-003	003	6.85	
UPRT18K	22800-004	004	6.87	
UPRT19J	22800-005	005	7.05	
UPRT19K	22800-006	006	7.03	
UPRT19L	22800-007	007	7.05	
UPRT19M	22800-008	008	7.24	
UPRT20A	22800-009	009	7.24	
UPRT20B	22800-010	010	7.21	
UPRT20C	22800-011	011	7.10	
UPRT20D	22800-012	012	7.08	
UPRT20E	22800-013	013	7.55	
UPRT20F	22800-014	014	7.07	
UPRT20G	22800-015	015	7.23	
UPRT21A	22800-016	016	7.79	
UPRT21B	22800-017	017	7.03	
UPRT21C	22800-018	018	7.38	
UPRT21D	22800-019	019	7.57	
UPRT21E	22800-020	020	7.65	
UPRT21F	22800-021	021	7.20	
UPRT21G	22800-022	022	7.58	
UPRT22A	22800-023	023	7.68	
UPRT22B	22800-024	024	7.74	✓
Date: 12/07/12			Thermometer ID: T-210	
Initial: AM			pH Meter ID: 1097	

P:\GENERAL PROJECTS\RPT-active\ERA 22800 Windward Environmental\LabForms\Sample Pore Water Analysis.wpd

Sample Pore Water Analysis

Day 10

Study: 22802

Client: Windward Environmental, LLC

Project: Lower Passaic River Remedial
Investigation

Field ID	Receipt Number	Sample Number	pH (SU)	temperature (°C)
Lab Control	22800-000	000	6.48	23
UPRT18I	22800-001	001	6.71	
UPRT18H	22800-002	002	6.77	
UPRT18J	22800-003	003	6.78	
UPRT18K	22800-004	004	6.81	
UPRT19J	22800-005	005	6.63	
UPRT19K	22800-006	006	6.77	
UPRT19L	22800-007	007	6.81	
UPRT19M	22800-008	008	6.84	
UPRT20A	22800-009	009	6.84	
UPRT20B	22800-010	010	6.83	
UPRT20C	22800-011	011	6.82	
UPRT20D	22800-012	012	6.83	
UPRT20E	22800-013	013	6.90	
UPRT20F	22800-014	014	6.71	
UPRT20G	22800-015	015	6.85	
UPRT21A	22800-016	016	6.96	
UPRT21B	22800-017	017	6.91	
UPRT21C	22800-018	018	6.95	
UPRT21D	22800-019	019	7.03	
UPRT21E	22800-020	020	7.13	
UPRT21F	22800-021	021	7.00	
UPRT21G	22800-022	022	7.05	
UPRT22A	22800-023	023	7.10	
UPRT22B	22800-024	024	7.15	↓

Date: 12/17/12
Initial: AM

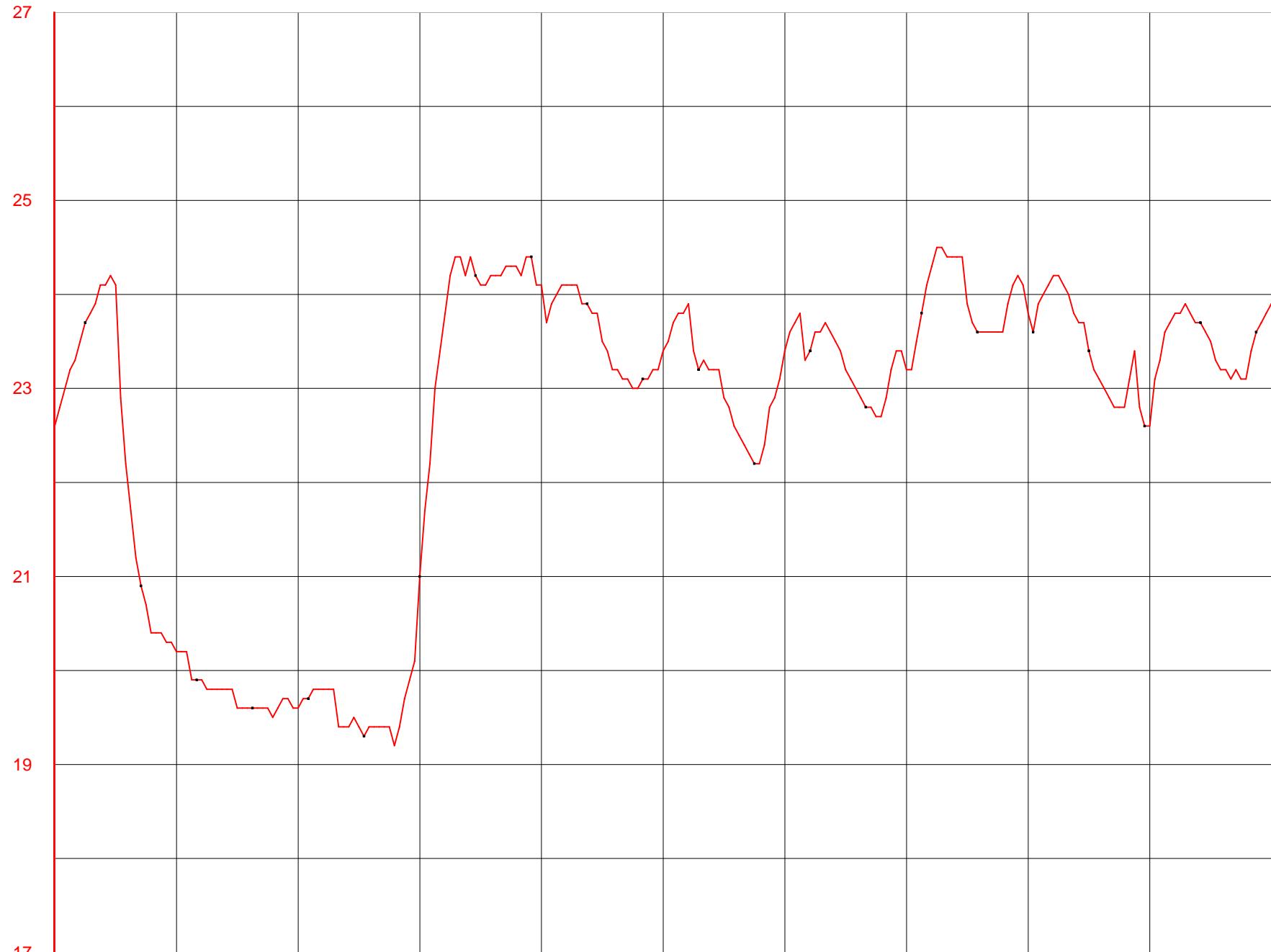
Thermometer ID: T-208
pH Meter ID: AB-5

°C

Temperature

Chironomus dilutus 10 Day Study
22802

Device	- MicroPoint1
Serial Number	- M35457
Device ID	- Temp



12:00:00 PM
Dec 07, 2012
10 Day C. dilutus Survival and Growth Sediment Toxicity Test.
Lower Passaic River Remedial Investigation.

12:00:00 PM
Dec 17, 2012
EDT

Report Name: MicroPoint1 Statistics
Report Date: Jan 09, 2013 04:43:29 PM EST
File Name: P:\TELATEMP\M35457 10-24-12 to 12-21-12.csv
Title: Chironomus dilutus 10 Day Study 22802
Device: MicroPoint1 - Temperature Recorder
Hardware Revision: REV2 (64K)
Serial Number: M35457
Device ID: Temp
Data Start Date: Dec 07, 2012 12:59:00 PM EDT
Data End Date: Dec 17, 2012 11:59:00 AM EDT
Reading Rate: 1 Hour
Readings: 1052 to 1291 of 1387
Last Calibration Date: Jul 06, 2012
Next Calibration Date: Jul 06, 2013

Channel 1 - Temperature

Minimum	.....	19.2 °C
Maximum	.....	24.5 °C
Average	.....	22.6325 °C
Standard Deviation	.....	1.665433 °C
Mean Kinetic Temperature	.....	22.77254 °C

Report Name: MicroPoint1 Data Table
 Report Date: Jan 09, 2013 04:43:15 PM EST
 File Name: P:\TELATEMP\M35457 10-24-12 to 12-21-12.csv
 Title: Chironomus dilutus 10 Day Study 22802
 Device: MicroPoint1 - Temperature Recorder
 Hardware Revision: REV2 (64K)
 Serial Number: M35457
 Device ID: Temp
 Data Start Date: Dec 07, 2012 12:59:00 PM EDT
 Data End Date: Dec 17, 2012 11:59:00 AM EDT
 Reading Rate: 1 Hour
 Readings: 1052 to 1291 of 1387
 Last Calibration Date: Jul 06, 2012
 Next Calibration Date: Jul 06, 2013

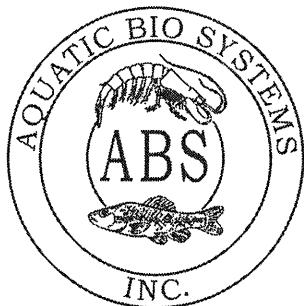
<u>Reading</u>	<u>Date and Time (EDT)</u>	<u>Temperature</u>	<u>Annotation</u>
1052	Dec 07, 2012 12:59:00 PM	22.800	°C
1053	Dec 07, 2012 01:59:00 PM	23.000	°C
1054	Dec 07, 2012 02:59:00 PM	23.200	°C
1055	Dec 07, 2012 03:59:00 PM	23.300	°C
1056	Dec 07, 2012 04:59:00 PM	23.500	°C
1057	Dec 07, 2012 05:59:00 PM	23.700	°C
1058	Dec 07, 2012 06:59:00 PM	23.800	°C
1059	Dec 07, 2012 07:59:00 PM	23.900	°C
1060	Dec 07, 2012 08:59:00 PM	24.100	°C
1061	Dec 07, 2012 09:59:00 PM	24.100	°C
1062	Dec 07, 2012 10:59:00 PM	24.200	°C
1063	Dec 07, 2012 11:59:00 PM	24.100	°C
1064	Dec 08, 2012 12:59:00 AM	22.900	°C
1065	Dec 08, 2012 01:59:00 AM	22.200	°C
1066	Dec 08, 2012 02:59:00 AM	21.700	°C
1067	Dec 08, 2012 03:59:00 AM	21.200	°C
1068	Dec 08, 2012 04:59:00 AM	20.900	°C
1069	Dec 08, 2012 05:59:00 AM	20.700	°C
1070	Dec 08, 2012 06:59:00 AM	20.400	°C
1071	Dec 08, 2012 07:59:00 AM	20.400	°C
1072	Dec 08, 2012 08:59:00 AM	20.400	°C
1073	Dec 08, 2012 09:59:00 AM	20.300	°C
1074	Dec 08, 2012 10:59:00 AM	20.300	°C
1075	Dec 08, 2012 11:59:00 AM	20.200	°C
1076	Dec 08, 2012 12:59:00 PM	20.200	°C
1077	Dec 08, 2012 01:59:00 PM	20.200	°C
1078	Dec 08, 2012 02:59:00 PM	19.900	°C
1079	Dec 08, 2012 03:59:00 PM	19.900	°C
1080	Dec 08, 2012 04:59:00 PM	19.900	°C
1081	Dec 08, 2012 05:59:00 PM	19.800	°C
1082	Dec 08, 2012 06:59:00 PM	19.800	°C
1083	Dec 08, 2012 07:59:00 PM	19.800	°C
1084	Dec 08, 2012 08:59:00 PM	19.800	°C
1085	Dec 08, 2012 09:59:00 PM	19.800	°C
1086	Dec 08, 2012 10:59:00 PM	19.800	°C
1087	Dec 08, 2012 11:59:00 PM	19.600	°C
1088	Dec 09, 2012 12:59:00 AM	19.600	°C
1089	Dec 09, 2012 01:59:00 AM	19.600	°C
1090	Dec 09, 2012 02:59:00 AM	19.600	°C
1091	Dec 09, 2012 03:59:00 AM	19.600	°C
1092	Dec 09, 2012 04:59:00 AM	19.600	°C
1093	Dec 09, 2012 05:59:00 AM	19.600	°C
1094	Dec 09, 2012 06:59:00 AM	19.500	°C
1095	Dec 09, 2012 07:59:00 AM	19.600	°C
1096	Dec 09, 2012 08:59:00 AM	19.700	°C
1097	Dec 09, 2012 09:59:00 AM	19.700	°C
1098	Dec 09, 2012 10:59:00 AM	19.600	°C
1099	Dec 09, 2012 11:59:00 AM	19.600	°C
1100	Dec 09, 2012 12:59:00 PM	19.700	°C
1101	Dec 09, 2012 01:59:00 PM	19.700	°C
1102	Dec 09, 2012 02:59:00 PM	19.800	°C
1103	Dec 09, 2012 03:59:00 PM	19.800	°C
1104	Dec 09, 2012 04:59:00 PM	19.800	°C
1105	Dec 09, 2012 05:59:00 PM	19.800	°C
1106	Dec 09, 2012 06:59:00 PM	19.800	°C
1107	Dec 09, 2012 07:59:00 PM	19.400	°C
1108	Dec 09, 2012 08:59:00 PM	19.400	°C
1109	Dec 09, 2012 09:59:00 PM	19.400	°C
1110	Dec 09, 2012 10:59:00 PM	19.500	°C
1111	Dec 09, 2012 11:59:00 PM	19.500	°C
1112	Dec 10, 2012 12:59:00 AM	19.300	°C

1113	Dec 10, 2012 01:59:00 AM	19.400	°C
1114	Dec 10, 2012 02:59:00 AM	19.400	°C
1115	Dec 10, 2012 03:59:00 AM	19.400	°C
1116	Dec 10, 2012 04:59:00 AM	19.400	°C
1117	Dec 10, 2012 05:59:00 AM	19.400	°C
1118	Dec 10, 2012 06:59:00 AM	19.200	°C
1119	Dec 10, 2012 07:59:00 AM	19.400	°C
1120	Dec 10, 2012 08:59:00 AM	19.700	°C
1121	Dec 10, 2012 09:59:00 AM	19.900	°C
1122	Dec 10, 2012 10:59:00 AM	20.100	°C
1123	Dec 10, 2012 11:59:00 AM	21.000	°C
1124	Dec 10, 2012 12:59:00 PM	21.700	°C
1125	Dec 10, 2012 01:59:00 PM	22.200	°C
1126	Dec 10, 2012 02:59:00 PM	23.000	°C
1127	Dec 10, 2012 03:59:00 PM	23.400	°C
1128	Dec 10, 2012 04:59:00 PM	23.800	°C
1129	Dec 10, 2012 05:59:00 PM	24.200	°C
1130	Dec 10, 2012 06:59:00 PM	24.400	°C
1131	Dec 10, 2012 07:59:00 PM	24.400	°C
1132	Dec 10, 2012 08:59:00 PM	24.200	°C
1133	Dec 10, 2012 09:59:00 PM	24.400	°C
1134	Dec 10, 2012 10:59:00 PM	24.200	°C
1135	Dec 10, 2012 11:59:00 PM	24.100	°C
1136	Dec 11, 2012 12:59:00 AM	24.100	°C
1137	Dec 11, 2012 01:59:00 AM	24.200	°C
1138	Dec 11, 2012 02:59:00 AM	24.200	°C
1139	Dec 11, 2012 03:59:00 AM	24.200	°C
1140	Dec 11, 2012 04:59:00 AM	24.300	°C
1141	Dec 11, 2012 05:59:00 AM	24.300	°C
1142	Dec 11, 2012 06:59:00 AM	24.300	°C
1143	Dec 11, 2012 07:59:00 AM	24.200	°C
1144	Dec 11, 2012 08:59:00 AM	24.400	°C
1145	Dec 11, 2012 09:59:00 AM	24.400	°C
1146	Dec 11, 2012 10:59:00 AM	24.100	°C
1147	Dec 11, 2012 11:59:00 AM	24.100	°C
1148	Dec 11, 2012 12:59:00 PM	23.700	°C
1149	Dec 11, 2012 01:59:00 PM	23.900	°C
1150	Dec 11, 2012 02:59:00 PM	24.000	°C
1151	Dec 11, 2012 03:59:00 PM	24.100	°C
1152	Dec 11, 2012 04:59:00 PM	24.100	°C
1153	Dec 11, 2012 05:59:00 PM	24.100	°C
1154	Dec 11, 2012 06:59:00 PM	24.100	°C
1155	Dec 11, 2012 07:59:00 PM	23.900	°C
1156	Dec 11, 2012 08:59:00 PM	23.900	°C
1157	Dec 11, 2012 09:59:00 PM	23.800	°C
1158	Dec 11, 2012 10:59:00 PM	23.800	°C
1159	Dec 11, 2012 11:59:00 PM	23.500	°C
1160	Dec 12, 2012 12:59:00 AM	23.400	°C
1161	Dec 12, 2012 01:59:00 AM	23.200	°C
1162	Dec 12, 2012 02:59:00 AM	23.200	°C
1163	Dec 12, 2012 03:59:00 AM	23.100	°C
1164	Dec 12, 2012 04:59:00 AM	23.100	°C
1165	Dec 12, 2012 05:59:00 AM	23.000	°C
1166	Dec 12, 2012 06:59:00 AM	23.000	°C
1167	Dec 12, 2012 07:59:00 AM	23.100	°C
1168	Dec 12, 2012 08:59:00 AM	23.100	°C
1169	Dec 12, 2012 09:59:00 AM	23.200	°C
1170	Dec 12, 2012 10:59:00 AM	23.200	°C
1171	Dec 12, 2012 11:59:00 AM	23.400	°C
1172	Dec 12, 2012 12:59:00 PM	23.500	°C
1173	Dec 12, 2012 01:59:00 PM	23.700	°C
1174	Dec 12, 2012 02:59:00 PM	23.800	°C
1175	Dec 12, 2012 03:59:00 PM	23.800	°C
1176	Dec 12, 2012 04:59:00 PM	23.900	°C
1177	Dec 12, 2012 05:59:00 PM	23.400	°C
1178	Dec 12, 2012 06:59:00 PM	23.200	°C
1179	Dec 12, 2012 07:59:00 PM	23.300	°C
1180	Dec 12, 2012 08:59:00 PM	23.200	°C
1181	Dec 12, 2012 09:59:00 PM	23.200	°C
1182	Dec 12, 2012 10:59:00 PM	23.200	°C
1183	Dec 12, 2012 11:59:00 PM	22.900	°C
1184	Dec 13, 2012 12:59:00 AM	22.800	°C
1185	Dec 13, 2012 01:59:00 AM	22.600	°C
1186	Dec 13, 2012 02:59:00 AM	22.500	°C
1187	Dec 13, 2012 03:59:00 AM	22.400	°C
1188	Day 10, 2012 04:59:00 AM	Sediment Toxicity Test	22.000 °C
1189	over Period B 2012 05:59:00 AM	22.200	°C
1190	Dec 13, 2012 06:59:00 AM	22.200	°C

1191	Dec 13, 2012 07:59:00 AM	22.400	°C
1192	Dec 13, 2012 08:59:00 AM	22.800	°C
1193	Dec 13, 2012 09:59:00 AM	22.900	°C
1194	Dec 13, 2012 10:59:00 AM	23.100	°C
1195	Dec 13, 2012 11:59:00 AM	23.400	°C
1196	Dec 13, 2012 12:59:00 PM	23.600	°C
1197	Dec 13, 2012 01:59:00 PM	23.700	°C
1198	Dec 13, 2012 02:59:00 PM	23.800	°C
1199	Dec 13, 2012 03:59:00 PM	23.300	°C
1200	Dec 13, 2012 04:59:00 PM	23.400	°C
1201	Dec 13, 2012 05:59:00 PM	23.600	°C
1202	Dec 13, 2012 06:59:00 PM	23.600	°C
1203	Dec 13, 2012 07:59:00 PM	23.700	°C
1204	Dec 13, 2012 08:59:00 PM	23.600	°C
1205	Dec 13, 2012 09:59:00 PM	23.500	°C
1206	Dec 13, 2012 10:59:00 PM	23.400	°C
1207	Dec 13, 2012 11:59:00 PM	23.200	°C
1208	Dec 14, 2012 12:59:00 AM	23.100	°C
1209	Dec 14, 2012 01:59:00 AM	23.000	°C
1210	Dec 14, 2012 02:59:00 AM	22.900	°C
1211	Dec 14, 2012 03:59:00 AM	22.800	°C
1212	Dec 14, 2012 04:59:00 AM	22.800	°C
1213	Dec 14, 2012 05:59:00 AM	22.700	°C
1214	Dec 14, 2012 06:59:00 AM	22.700	°C
1215	Dec 14, 2012 07:59:00 AM	22.900	°C
1216	Dec 14, 2012 08:59:00 AM	23.200	°C
1217	Dec 14, 2012 09:59:00 AM	23.400	°C
1218	Dec 14, 2012 10:59:00 AM	23.400	°C
1219	Dec 14, 2012 11:59:00 AM	23.200	°C
1220	Dec 14, 2012 12:59:00 PM	23.200	°C
1221	Dec 14, 2012 01:59:00 PM	23.500	°C
1222	Dec 14, 2012 02:59:00 PM	23.800	°C
1223	Dec 14, 2012 03:59:00 PM	24.100	°C
1224	Dec 14, 2012 04:59:00 PM	24.300	°C
1225	Dec 14, 2012 05:59:00 PM	24.500	°C
1226	Dec 14, 2012 06:59:00 PM	24.500	°C
1227	Dec 14, 2012 07:59:00 PM	24.400	°C
1228	Dec 14, 2012 08:59:00 PM	24.400	°C
1229	Dec 14, 2012 09:59:00 PM	24.400	°C
1230	Dec 14, 2012 10:59:00 PM	24.400	°C
1231	Dec 14, 2012 11:59:00 PM	23.900	°C
1232	Dec 15, 2012 12:59:00 AM	23.700	°C
1233	Dec 15, 2012 01:59:00 AM	23.600	°C
1234	Dec 15, 2012 02:59:00 AM	23.600	°C
1235	Dec 15, 2012 03:59:00 AM	23.600	°C
1236	Dec 15, 2012 04:59:00 AM	23.600	°C
1237	Dec 15, 2012 05:59:00 AM	23.600	°C
1238	Dec 15, 2012 06:59:00 AM	23.600	°C
1239	Dec 15, 2012 07:59:00 AM	23.900	°C
1240	Dec 15, 2012 08:59:00 AM	24.100	°C
1241	Dec 15, 2012 09:59:00 AM	24.200	°C
1242	Dec 15, 2012 10:59:00 AM	24.100	°C
1243	Dec 15, 2012 11:59:00 AM	23.800	°C
1244	Dec 15, 2012 12:59:00 PM	23.600	°C
1245	Dec 15, 2012 01:59:00 PM	23.900	°C
1246	Dec 15, 2012 02:59:00 PM	24.000	°C
1247	Dec 15, 2012 03:59:00 PM	24.100	°C
1248	Dec 15, 2012 04:59:00 PM	24.200	°C
1249	Dec 15, 2012 05:59:00 PM	24.200	°C
1250	Dec 15, 2012 06:59:00 PM	24.100	°C
1251	Dec 15, 2012 07:59:00 PM	24.000	°C
1252	Dec 15, 2012 08:59:00 PM	23.800	°C
1253	Dec 15, 2012 09:59:00 PM	23.700	°C
1254	Dec 15, 2012 10:59:00 PM	23.700	°C
1255	Dec 15, 2012 11:59:00 PM	23.400	°C
1256	Dec 16, 2012 12:59:00 AM	23.200	°C
1257	Dec 16, 2012 01:59:00 AM	23.100	°C
1258	Dec 16, 2012 02:59:00 AM	23.000	°C
1259	Dec 16, 2012 03:59:00 AM	22.900	°C
1260	Dec 16, 2012 04:59:00 AM	22.800	°C
1261	Dec 16, 2012 05:59:00 AM	22.800	°C
1262	Dec 16, 2012 06:59:00 AM	22.800	°C
1263	Dec 16, 2012 07:59:00 AM	23.100	°C
1264	Dec 16, 2012 08:59:00 AM	23.400	°C
1265	Dec 16, 2012 09:59:00 AM	22.800	°C
1266	Day 16, 2012 10:59:00 AM Sediment Toxicity Test	22.600	°C
1267	Lower Porewater Recovery Time	22.600	°C
1268	Dec 16, 2012 12:59:00 PM	23.100	°C

1269	Dec 16, 2012 01:59:00 PM	23.300	°C
1270	Dec 16, 2012 02:59:00 PM	23.600	°C
1271	Dec 16, 2012 03:59:00 PM	23.700	°C
1272	Dec 16, 2012 04:59:00 PM	23.800	°C
1273	Dec 16, 2012 05:59:00 PM	23.800	°C
1274	Dec 16, 2012 06:59:00 PM	23.900	°C
1275	Dec 16, 2012 07:59:00 PM	23.800	°C
1276	Dec 16, 2012 08:59:00 PM	23.700	°C
1277	Dec 16, 2012 09:59:00 PM	23.700	°C
1278	Dec 16, 2012 10:59:00 PM	23.600	°C
1279	Dec 16, 2012 11:59:00 PM	23.500	°C
1280	Dec 17, 2012 12:59:00 AM	23.300	°C
1281	Dec 17, 2012 01:59:00 AM	23.200	°C
1282	Dec 17, 2012 02:59:00 AM	23.200	°C
1283	Dec 17, 2012 03:59:00 AM	23.100	°C
1284	Dec 17, 2012 04:59:00 AM	23.200	°C
1285	Dec 17, 2012 05:59:00 AM	23.100	°C
1286	Dec 17, 2012 06:59:00 AM	23.100	°C
1287	Dec 17, 2012 07:59:00 AM	23.400	°C
1288	Dec 17, 2012 08:59:00 AM	23.600	°C
1289	Dec 17, 2012 09:59:00 AM	23.700	°C
1290	Dec 17, 2012 10:59:00 AM	23.800	°C
1291	Dec 17, 2012 11:59:00 AM	23.900	°C

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524



99CdABS120712

Toll Free: 800/331-5916
Tel: 970/484-5091 Fax: 970/484-2514

ORGANISM HISTORY

DATE: 12/6/2012

SPECIES: Chironomus dilutus (formerly C. tentans)

AGE: Deposited 11/24/2012

LIFE STAGE: Second Instar 12/5/2012

HATCH DATE: Emergent date 12/18/2012

BEGAN FEEDING: Immediately

FOOD: Selenastrum sp., Flake slurry

Water Chemistry Record:	Current	Range
TEMPERATURE:	24°C	22-26°C
SALINITY/CONDUCTIVITY:	--	--
TOTAL HARDNESS (as CaCO ₃):	134 mg/l	100-190 mg/l
TOTAL ALKALINITY (as CaCO ₃):	50 mg/l	50-110 mg/l
pH:	7.50	7.50-8.20

Comments:


[Signature]
Facility Supervisor

Test Sediment Preparation Notes

Study: 22801/22802

Client: Windward Environmental, LLC

Project: Lower Passaic River Remedial Investigation

Field ID	Receipt Number	Sample Number	Notes
UPRT18I	22800-001	001	Very sandy. Sticks & a few rocks. NO PORE WATER PRESENT
UPRT18H	22800-002	002	Sandy. High moisture content
UPRT18J	22800-003	003	Same as Sample 2 with some organics present
UPRT18K	22800-004	004	Same as Sample 001
UPRT19J	22800-005	005	Fine organics and silt present. No overlying pore H ₂ O
UPRT19K	22800-006	006	Sand with rocks and sticks. Low % moisture
UPRT19L	22800-007	007	Medium to coarse sand. Very dry.
UPRT19M	22800-008	008	Same as 007. Some rocks
UPRT20A	22800-009	009	Some moisture. Coarse sand with rocks and organics
UPRT20B	22800-010	010	Some moisture. Coarse sand with some organics.
UPRT20C	22800-011	011	Silt and small organics. High % moisture ^{1 bucket} fully consumed
UPRT20D	22800-012	012	Silt and organics. Contains twigs and roots. Moisture ^{Leptospis present} .
UPRT20E	22800-013	013	Sand and gravel with little organics. No moisture
UPRT20F	22800-014	014	Silt and small organics. High % moisture. ^{Anthrax} Leptospis present.
UPRT20G	22800-015	015	Median and coarse sand with some rocks. High % moisture
UPRT21A	22800-016	016	Median and coarse sand with little moisture.
UPRT21B	22800-017	017	Silt and small organics with large debris. High % moisture
UPRT21C	22800-018	018	Coarse sand with few organics and ^{some} moisture ^{20% moisture}
UPRT21D	22800-019	019	Coarse sand with few organics and some moisture
UPRT21E	22800-020	020	Same as sample 19
UPRT21F	22800-021	021	Fine sand with ^{some} organics and silt present. ^{Some moisture} present
UPRT21G	22800-022	022	Coarse sand with no large debris. low % moisture
UPRT22A	22800-023	023	Coarse sand and smaller rocks /debris. Low moisture.
UPRT22B	22800-024	024	Sand and gravel with very little organics. Very low % moisture.

Date: 12/06/12

Initial: AM/JTP

Sample Pore Water Analysis
Study: 22801/22802
Client: Windward Environmental, LLC
Project: Lower Passaic River Remedial Investigation

Field ID	Receipt Number	Sample Number	Salinity (ppt)	pH (SU)
UPRT18I	22800-001	001	NA	NA
UPRT18H	22800-002	002	0.3	6.54
UPRT18J	22800-003	003	NA	NA
UPRT18K	22800-004	004	NA	NA
UPRT19J	22800-005	005	0.5	6.46
UPRT19K	22800-006	006	NA	NA
UPRT19L	22800-007	007	NA	NA
UPRT19M	22800-008	008	NA	NA
UPRT20A	22800-009	009	0.5	6.74
UPRT20B	22800-010	010	0.4	6.84
UPRT20C	22800-011	011	0.4	6.83
UPRT20D	22800-012	012	0.4	6.80
UPRT20E	22800-013	013	NA	NA
UPRT20F	22800-014	014	0.5	6.07
UPRT20G	22800-015	015	0.4	7.04
UPRT21A	22800-016	016	NA	NA
UPRT21B	22800-017	017	0.6	6.80
UPRT21C	22800-018	018	0.5	7.19
UPRT21D	22800-019	019	NA	NA
UPRT21E	22800-020	020	NA	NA
UPRT21F	22800-021	021	0.4	6.83
UPRT21G	22800-022	022	NA	NA
UPRT22A	22800-023	023	NA	NA
UPRT22B	22800-024	024	NA	NA
Date: 12/06/12		Salinity Meter ID: YS130C		
Initial: SG/4		pH Meter ID: AB-15		

P:\GENERAL PROJECTS\RPT-active\ERA 22800 Windward Environmental\LabForms\Sample Pore Water Analysis.wpd

"NA" Indicates that pore water was not available for analysis - RAM

* 000 0.2 7.03

STUDY: 22800
CLIENT: Windward Environmental, LLC.
PROJECT: Lower Passaic River Remedial Investigation
TASK: Pore Water Alkalinity Summary
METHOD: EPA 310.2

Sample LAB ID	Field ID	Sample Number	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-000	Lab Control	000	22800-100	Water	110	4	mg/L	12/06/12 1500	12/20/12 1522
22800-002	UPRT18H	002	22800-102	Water	54	4	mg/L	12/06/12 1500	12/20/12 1523
22800-011	UPRT20C	011	22800-111	Water	230	6	mg/L	12/06/12 1500	12/20/12 1539
22800-012	UPRT20D	012	22800-112	Water	150	4	mg/L	12/06/12 1500	12/20/12 1529
22800-014	UPRT20F	014	22800-114	Water	28	2	mg/L	12/06/12 1500	12/20/12 1530
22800-015	UPRT20G	015	22800-115	Water	130	4	mg/L	12/06/12 1500	12/20/12 1532
22800-017	UPRT21B	017	22800-117	Water	460	10	mg/L	12/06/12 1500	12/20/12 1540
22800-018	UPRT21C	018	22800-118	Water	220	10	mg/L	12/06/12 1500	12/20/12 1545
22800-021	UPRT21F	021	22800-121	Water	170	4	mg/L	12/06/12 1500	12/20/12 1546

STUDY: 22800
CLIENT: Windward Environmental, LLC.
PROJECT: Lower Passaic River Remedial Investigation
TASK: Pore Water Hardness Summary
METHOD: Hardness/SW846 3rd Ed. 6020

Sample LAB ID	Field ID	Sample Number	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-000	Lab Control	000	22800-125	Water	140	0.4	mg/L	12/06/12 1500	12/19/12
22800-002	UPRT18H	002	22800-127	Water	350	0.4	mg/L	12/06/12 1500	12/19/12
22800-011	UPRT20C	011	22800-136	Water	360	0.4	mg/L	12/06/12 1500	12/19/12
22800-012	UPRT20D	012	22800-137	Water	240	0.4	mg/L	12/06/12 1500	12/19/12
22800-014	UPRT20F	014	22800-139	Water	780	0.4	mg/L	12/06/12 1500	12/19/12
22800-017	UPRT21B	017	22800-142	Water	290	0.4	mg/L	12/06/12 1500	12/19/12
22800-018	UPRT21C	018	22800-143	Water	300	0.4	mg/L	12/06/12 1500	12/19/12
22800-021	UPRT21F	021	22800-146	Water	220	0.4	mg/L	12/06/12 1500	12/19/12

STUDY: 22800
CLIENT: Windward Environmental, LLC.
PROJECT: Lower Passaic River Remedial Investigation
TASK: Pore Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample LAB ID	Field ID	Sample Number	LAB ID	Ammonia					SAMPLED	ANALYZED
				Total	Unionized	QLIMIT	UNITS			
22800-000	Lab Control	000	22800-150	ND	0.0001	0.1	mg/L as N	12/06/12 1500	01/02/13 1208	
22800-002	UPRT18H	002	22800-152	1.6	0.0022	0.1	mg/L as N	12/06/12 1500	01/02/13 1209	
22800-005	UPRT19J	005	22800-155	3.5	0.0040	0.1	mg/L as N	12/06/12 1500	01/02/13 1210	
22800-009	UPRT20A	009	22800-159	1.5	0.0033	0.1	mg/L as N	12/06/12 1500	01/02/13 1211	
22800-010	UPRT20B	010	22800-160	1	0.0027	0.1	mg/L as N	12/06/12 1500	01/02/13 1214	
22800-011	UPRT20C	011	22800-161	10	0.0267	0.1	mg/L as N	12/06/12 1500	01/02/13 1215	
22800-012	UPRT20D	012	22800-162	5.8	0.0144	0.1	mg/L as N	12/06/12 1500	01/02/13 1216	
22800-014	UPRT20F	014	22800-164	12	0.0056	0.1	mg/L as N	12/06/12 1500	01/02/13 1217	
22800-017	UPRT21B	017	22800-167	38	0.0947	0.2	mg/L as N	12/06/12 1500	01/02/13 1511	
22800-018	UPRT21C	018	22800-168	1.2	0.0073	0.1	mg/L as N	12/06/12 1500	01/02/13 1219	
22800-021	UPRT21F	021	22800-171	4.6	0.0123	0.1	mg/L as N	12/06/12 1500	01/02/13 1219	

STUDY: 22800
CLIENT: Windward Environmental, LLC.
PROJECT: Lower Passaic River Remedial Investigation
TASK: Pore Water Dissolved Organic Carbon Summary
METHOD: SM 5310 C

Sample LAB ID	Field ID	Sample Number	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-000	Lab Control	000	22800-175	Water	26	0.8	mg/L	12/06/12 1500	12/14/12
22800-002	UPRT18H	002	22800-177	Water	8.8	0.8	mg/L	12/06/12 1500	12/14/12
22800-009	UPRT20A	009	22800-184	Water	21	0.8	mg/L	12/06/12 1500	12/14/12
22800-011	UPRT20C	011	22800-186	Water	10	0.8	mg/L	12/06/12 1500	12/14/12
22800-012	UPRT20D	012	22800-187	Water	7.9	0.8	mg/L	12/06/12 1500	12/14/12
22800-014	UPRT20F	014	22800-189	Water	18	0.8	mg/L	12/06/12 1500	12/18/12
22800-017	UPRT21B	017	22800-192	Water	42	2	mg/L	12/06/12 1500	12/18/12
22800-018	UPRT21C	018	22800-193	Water	47	1.2	mg/L	12/06/12 1500	12/14/12
22800-021	UPRT21F	021	22800-196	Water	9.5	0.8	mg/L	12/06/12 1500	12/14/12

STUDY: 22800

CLIENT: Windward Environmental, LLC.

PROJECT: Lower Passaic River Remedial Investigation

TASK: Initial Sample Quality and Chemistry

Field ID	LabID	Pore Water Qualities							Sediment Total Volatile Solids (%)
		Salinity (ppt)	pH (SU)	Alkalinity (mg/L)	Hardness (mg/L)	Total Ammonia (mg/L)	Unionized Ammonia (mg/L)	Dissolved organic carbon (mg/L)	
Lab Control	22800-000	na	na	110	140	ND	na	26	na
UPRT18I	22800-001	na	na	na	na	na	na	na	7.54
UPRT18H	22800-002	0.3	6.54	54	350	1.6	0.002	8.8	3.43
UPRT18J	22800-003	na	na	na	na	na	na	na	1.61
UPRT18K	22800-004	na	na	na	na	na	na	na	3.02
UPRT19J	22800-005	0.5	6.46	na	na	3.5	0.004	na	16.3
UPRT19K	22800-006	na	na	na	na	na	na	na	5.72
UPRT19L	22800-007	na	na	na	na	na	na	na	1.73
UPRT19M	22800-008	na	na	na	na	na	na	na	1.25
UPRT20A	22800-009	0.5	6.74	na	na	1.5	0.003	21	1.86
UPRT20B	22800-010	0.4	6.84	na	na	1	0.003	na	1.90
UPRT20C	22800-011	0.4	6.83	230	360	10	0.027	10	10.6
UPRT20D	22800-012	0.4	6.80	150	240	5.8	0.014	7.9	8.16
UPRT20E	22800-013	na	na	na	na	na	na	na	1.16
UPRT20F	22800-014	0.5	6.07	28	780	12	0.006	18	13.3
UPRT20G	22800-015	0.4	7.04	130	na	na	na	na	1.51
UPRT21A	22800-016	na	na	na	na	na	na	na	1.54
UPRT21B	22800-017	0.6	6.80	460	290	38	0.095	42	16.8
UPRT21C	22800-018	0.5	7.19	220	300	1.2	0.007	47	2.20
UPRT21D	22800-019	na	na	na	na	na	na	na	0.94
UPRT21E	22800-020	na	na	na	na	na	na	na	2.52
UPRT21F	22800-021	0.4	6.83	170	220	4.6	0.012	9.5	4.20
UPRT21G	22800-022	na	na	na	na	na	na	na	2.78
UPRT22A	22800-023	na	na	na	na	na	na	na	2.04
UPRT22B	22800-024	na	na	na	na	na	na	na	4.76

Note: "na" Indicates that the value is not available.

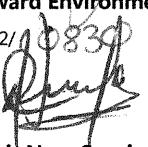
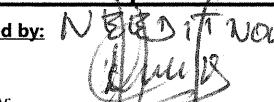
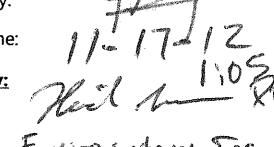
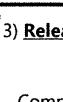
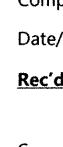
STUDY: 22800
CLIENT: Windward Environmental, LLC.
PROJECT: Lower Passaic River Remedial Investigation
TASK: Total Volatile Solids Summary
METHOD: AASHTO T267-86(2004)

LAB ID	Field ID	Sample Number	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
22800-001	UPRT18I	001	Solid	7.54	0.1	% dry wt	11/12/12 1013	12/28/12 0530
22800-002	UPRT18H	002	Solid	3.43	0.1	% dry wt	11/12/12 1217	12/28/12 0530
22800-003	UPRT18J	003	Solid	1.61	0.1	% dry wt	11/12/12 1321	12/28/12 0530
22800-004	UPRT18K	004	Solid	3.02	0.1	% dry wt	11/12/12 1437	12/28/12 0530
22800-005	UPRT19J	005	Solid	16.3	0.1	% dry wt	11/13/12 0820	12/28/12 0530
22800-006	UPRT19K	006	Solid	5.72	0.1	% dry wt	11/13/12 0946	12/28/12 0530
22800-007	UPRT19L	007	Solid	1.73	0.1	% dry wt	11/13/12 1055	12/28/12 0530
22800-008	UPRT19M	008	Solid	1.25	0.1	% dry wt	11/13/12 1159	12/28/12 0530
22800-009	UPRT20A	009	Solid	1.86	0.1	% dry wt	11/13/12 1330	12/28/12 0530
22800-010	UPRT20B	010	Solid	1.90	0.1	% dry wt	11/13/12 1441	12/28/12 0530
22800-011	UPRT20C	011	Solid	10.6	0.1	% dry wt	11/14/12 0815	12/28/12 0530
22800-012	UPRT20D	012	Solid	8.16	0.1	% dry wt	11/14/12 0914	12/28/12 0530
22800-013	UPRT20E	013	Solid	1.16	0.1	% dry wt	11/14/12 1112	12/28/12 0530
22800-014	UPRT20F	014	Solid	13.3	0.1	% dry wt	11/14/12 1149	12/28/12 0530
22800-015	UPRT20G	015	Solid	1.51	0.1	% dry wt	11/14/12 1252	12/28/12 0530
22800-016	UPRT21A	016	Solid	1.54	0.1	% dry wt	11/14/12 1352	12/28/12 0530
22800-017	UPRT21B	017	Solid	16.8	0.1	% dry wt	11/15/12 0819	12/28/12 0530
22800-018	UPRT21C	018	Solid	2.20	0.1	% dry wt	11/15/12 0917	12/28/12 0530
22800-019	UPRT21D	019	Solid	0.94	0.1	% dry wt	11/15/12 1008	12/28/12 0530
22800-020	UPRT21E	020	Solid	2.52	0.1	% dry wt	11/15/12 1052	12/28/12 0530
22800-021	UPRT21F	021	Solid	4.20	0.1	% dry wt	11/15/12 1129	12/28/12 0530
22800-022	UPRT21G	022	Solid	2.78	0.1	% dry wt	11/15/12 1225	12/28/12 0530
22800-023	UPRT22A	023	Solid	2.04	0.1	% dry wt	11/16/12 0806	12/28/12 0530
22800-024	UPRT22B	024	Solid	4.76	0.1	% dry wt	11/16/12 0909	12/28/12 0530

CHAIN-OF-CUSTODY/TEST REQUEST FORM

Project/Client Name: **Passaic RI/FS Background and Ref Sediment**
 Project Number: **Task 39.1**
 Contact Name: **Karen Tobiason**
 Sampled By: **Thai Do**

Ship to: **EnviroSystems** # UPR-ES111712-1
 Attn: **Ken Simons** Shipping Date: **11.17.12**
 Shipper: **WDS Courier** Airbill Number: **N/A**
 Form filled out by: **T. Do** Turnaround requested: **Standard**

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Toxicity Testing	Test(s) Requested (check test(s) required)					Comments / Instructions [Jar tag number(s)]
11.12.12	1013	UPRT18I	2	Sed	X						
11.12.12	1217	UPRT18H	2	Sed	X						
11.12.12	1321	UPRT18J	2	Sed	X						
11.12.12	1437	UPRT18K	2	Sed	X						
11.13.12	0820	UPRT19J	2	Sed	X						
11.13.12	0946	UPRT19K	2	Sed	X						
11.13.12	1055	UPRT19L	2	Sed	X						
11.13.12	1159	UPRT19M	2	Sed	X						
11.13.12	1330	UPRT20A	2	Sed	X						
Total Number of Containers			18/48	Purchase Order / Statement of Work #2012-0042							
1) Released by:	2) Released by:	3) Released by:	4) Released by:	5) Released by:							
 Company: Windward Environmental Date/Time: 11.17.12/ 10:30 AM <u>Rec'd by:</u> 	 Company: Need it Now Courier Date/Time: 11.17.12/ 8:30 AM 	 Company: EnviroSystems Inc. Date/Time: 11/17/12 1305 									

To be completed by Laboratory upon sample receipt:

Date of receipt: 11/17/12	Laboratory W.O. #:
Condition upon receipt: Acceptable	Time of receipt: 1305
Cooler temperature: 40C	Received by: Kirk Cram



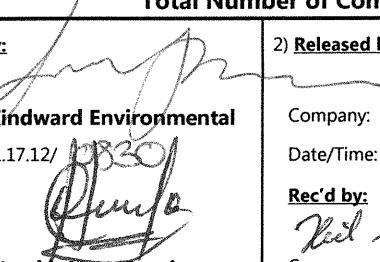
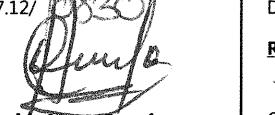
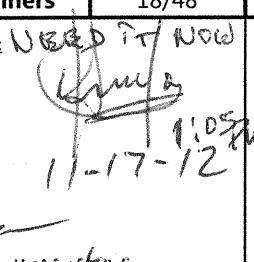
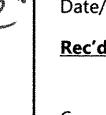
200 West Mercer Street
 Suite 401
 Seattle, WA 98119
 Tel: (206) 378-1364
 Fax: (206) 217-9343

10 Day C. dilutus Survival and Growth Sediment Toxicity Test.
 Lower Passaic River Remedial Investigation.

CHAIN-OF-CUSTODY/TEST REQUEST FORM

Project/Client Name: **Passaic RI/FS Background and Ref Sediment**
 Project Number: **Task 39.1**
 Contact Name: **Karen Tobiason**
 Sampled By: **Thai Do**

Ship to: **EnviroSystems** # UPR-ES111712-2
 Attn: **Ken Simons** Shipping Date: **11.17.12**
 Shipper: **WDS Courier** Airbill Number: **N/A**
 Form filled out by: **T. Do** Turnaround requested: **Standard**

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Toxicity Testing	Test(s) Requested (check test(s) required)					Comments / Instructions [Jar tag number(s)]
11.13.12	1441	UPRT20B	2	Sed	X						
11.14.12	0815	UPRT20C	2	Sed	X						
11.14.12	0914	UPRT20D	2	Sed	X						
11.14.12	1112	UPRT20E	2	Sed	X						
11.14.12	1149	UPRT20F	2	Sed	X						
11.14.12	1252	UPRT20G	2	Sed	X						
11.14.12	1352	UPRT21A	2	Sed	X						
11.15.12	0819	UPRT21B	2	Sed	X						
11.15.12	0917	UPRT21C	2	Sed	X						
Total Number of Containers			18/48	Purchase Order / Statement of Work #2012-0042							
1) Released by:	2) Released by:	3) Released by:	4) Released by:	5) Released by:							
 Company: Windward Environmental Date/Time: 11.17.12/ 0830 <u>Rec'd by:</u>  Company: Need it Now Courier Date/Time: 11.17.12/ 0830	 Company: EnviroSystems Date/Time: 11.17.12/ 1305 <u>Rec'd by:</u>  Company: EnviroSystems Date/Time: 11.17.12/ 1305										

To be completed by Laboratory upon sample receipt:

Date of receipt: 11/17/12	Laboratory W.O. #:
Condition upon receipt: Acceptable	Time of receipt: 1305
Cooler temperature: 40C	Received by: Kirk Cram



200 West Mercer Street
 Suite 401
 Seattle, WA 98119
 Tel: (206) 378-1364
 Fax: (206) 217-9343

CHAIN-OF-CUSTODY/TEST REQUEST FORM

Project/Client Name:	Passaic RI/FS Background and Ref Sediment	Ship to:	EnviroSystems	# UPR-ES111712-3
Project Number:	Task 39.1	Attn:	Ken Simons	Shipping Date: 11.17.12
Contact Name:	Karen Tobiason	Shipper:	WDS Courier	Airbill Number: N/A
Sampled By:	Thai Do	Form filled out by:	T. Do	Turnaround requested: Standard

WindWard LLC
environmental

10 Day C. dilutus Survival and Growth Sediment Toxicity Test Lower Passaic River Remedial Investigation

200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: (206) 378-1364
Fax: (206) 217-9343

To be completed by Laboratory upon sample receipt:

Date of receipt::	9/17/12	Laboratory W.O. #:	
Condition upon receipt:	Acceptable	Time of receipt:	1305
Cooler temperature:	4°C	Received by:	K. K. Cram

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 1 of 2

STUDY NO: 22800
SDG No:
Project: Lower Passaic River Remedial Investigation
Delivered via:
Date and Time Received: 11/17/12 1305 Date and Time Logged into Lab: 11/17/12 1305
Received By: KC Logged into Lab by: KC RAM
Air bill / Way bill: No Air bill included in folder if received? NA
Cooler on ice/packs: Yes Custody Seals present? NA
Cooler Blank Temp (C) at arrival: 4C Custody Seals intact? NA
Number of COC Pages: 3
COC Serial Number(s):
COC Complete: Yes Does the info on the COC match the samples? Yes
Sampled Date: Yes Were samples received within holding time? Yes
Field ID complete: Yes Were all samples properly labeled? Yes
Sampled Time: Yes Were proper sample containers used? Yes
Analysis request: Yes Were samples received intact? (none broken or leaking) Yes
COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes
Were all samples received? Yes Were VOC vials free of headspace? NA
Client notification/authorization: Not required

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd	Verified
					Pres'n	Pres'n
UPRT18I	22800-001	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT18H	22800-002	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT18J	22800-003	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT18K	22800-004	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT19J	22800-005	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT19K	22800-006	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT19L	22800-007	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT19M	22800-008	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT20A	22800-009	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT20B	22800-010	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT20C	22800-011	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT20D	22800-012	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT20E	22800-013	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT20F	22800-014	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT20G	22800-015	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT21A	22800-016	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT21B	22800-017	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT21C	22800-018	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT21D	22800-019	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT21E	22800-020	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT21F	22800-021	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT21G	22800-022	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			
UPRT22A	22800-023	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			

Notes and qualifications:

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 2 of 2

STUDY NO: 22800
 SDG No:
 Project: Lower Passaic River Remedial Investigation
 Delivered via:
 Date and Time Received: 11/17/12 1305 Date and Time Logged into Lab: 11/17/12 1305
 Received By: KC Logged into Lab by: KC RAM
 Air bill / Way bill: No Air bill included in folder if received? NA
 Cooler on ice/packs: Yes Custody Seals present? NA
 Cooler Blank Temp (C) at arrival: 4C Custody Seals intact? NA
 Number of COC Pages: 3
 COC Serial Number(s):
 COC Complete:
 Sampled Date: Yes Does the info on the COC match the samples? Yes
 Field ID complete: Yes Were samples received within holding time? Yes
 Sampled Time: Yes Were all samples properly labeled? Yes
 Analysis request: Yes Were proper sample containers used? Yes
 COC Signed and dated: Yes Were samples received intact? (none broken or leaking) Yes
 Were all samples received? Yes Were sample volumes sufficient for requested analysis? Yes
 Were VOC vials free of headspace? NA
 Client notification/authorization: Not required

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd	Verified
				Pres'n	Pres'n	
UPRT22B	22800-024	S	Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metal: 1 x 1 gallon 14C			

Notes and qualifications: 22800-024 S Ha28T; Cd10T; TVS; Pore Water: NH3, DOC, ALK, Metals Hard, Salinity, pH;

APPENDIX E. VALIDATION REPORT

DMR

Dinnel Marine Resources

**LOWER PASSAIC RIVER REMEDIAL INVESTIGATION:
SEDIMENT TESTING QUALITY ASSURANCE REVIEW**

Final Report

12 March 2013

For

**Windward Environmental LLC
Seattle, Washington**

Prepared By

**Dinnel Marine Resources
Anacortes, Washington**

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INTRODUCTION

The Lower Passaic River Study Area Cooperating Parties Group, working in conjunction with Windward Environmental LLC, contracted with EnviroSystems, Inc. (ESI), Hampton, New Hampshire, to conduct sediment toxicity tests of Lower Passaic River sediment samples. Dinnel Marine Resources (DMR), Anacortes, Washington, was retained by Windward Environmental to provide independent Quality Assurance services. These services consisted of reviews of all toxicity test data generated by the laboratory. For this round of testing the sediment toxicity tests performed by ESI included the following:

- 28-day *Hyalella azteca* survival and growth toxicity test
- 10-day *Chironomus dilutus* survival and growth toxicity test

This report summarizes the results of Quality Assurance reviews of all sediment test data generated by ESI in late 2012. Results of a 2009 pretest audit of ESI's testing laboratory, personnel and equipment are summarized in a previous report (DMR 2009) to Windward Environmental.

Laboratory Certification and Capabilities

EnviroSystems, Inc. has provided a wide range of environmental toxicology, microbiology and analytical chemistry testing services since 1981 (see: <http://www.envirosystems.com/> for the laboratory web site) and was incorporated in the State of New Hampshire in May 1992. The laboratory is accredited by the state of New Hampshire's Environmental Laboratory Accreditation Program (NHELAP – Certificate Number 151312 effective 15 June 2012 through 14 June 2013) and is accredited for a long list of chemical analyses and bioassay tests. ESI is also certified by the Massachusetts Department of Environmental Quality for various chemical analyses (Certificate # M-NH906 effective 1 July 2012 through 30 June 2013).

The Facility and Personnel

The laboratory is housed in a 10,000 ft² building located on the shores of Hampton Seabrook Estuary and is within 2 miles of the open ocean. Natural seawater is pumped from the estuary during periods of high tide and freshwater is provided by on-site deep-water wells. The facility floor plan provides over 7,000 ft² for toxicological and chemical testing, 500 ft² for organism culture and accumulation, with the remaining space being used for administration and storage. EnviroSystems' summary of scientific staff positions, education and experience dated July 2009 lists 20 current personnel.

Approximately ¼ of the staff have 15 or more years experience in the areas of toxicology and chemistry and are well prepared to provide training and supervision of the remaining staff.

Quality Assurance

The QA steps taken by Dinnel Marine Resources to ensure high quality data and maximum data completeness after the conclusion of testing are described in this report. Major QA review tasks by DMR included the following:

- An initial evaluation of all data for completeness, correct data entries, and accurate transcription to electronic formats
- A final QA evaluation of overall data quality and usability

QUALITY ASSURANCE AUDIT RESULTS

INITIAL DATA EVALUATIONS

All raw data forms and electronic database files were reviewed for completeness and fidelity of transcription to electronic formats, where applicable. A 100% check was made of all data entered into ESI's internal electronic database from laboratory bench sheets. All errors, omissions, clarifications, or changes needed to ESI's draft report are documented below.

Testing protocols referred to during this review include the following:

- ESI's testing protocols (ESI 2009a, b)
- Windward Environmental QAPP (Windward Environmental 2012)
- ASTM Standard Guides (ASTM 2008a, b)
- EPA Sediment Testing Guide (EPA 2000)

FINAL QA EVALUATION OF OVERALL DATA QUALITY AND USABILITY

Chain of Custody and Sample Holding

All chain of custody protocols were properly observed in transfers of sediment samples from Windward Environmental to ESI. Temperatures measured in the ice chests when they were received by ESI were 4° C. The test and laboratory control sediments were stored at 4° C in a locked cold room until testing was initiated. If samples contained significant headspaces, these headspaces were purged of air with nitrogen gas prior to storage.

Review of the Amphipod, *Hyalella azteca*, 28-day Survival and Growth Sediment Toxicity Test (ESI Study 22801)

1. A *Hyalella azteca* toxicity test was conducted on Lower Passaic River sediment samples. The test was initiated on 7 December 2012 and included 24 test sediments, one laboratory negative control sediment and one positive (toxic) control test with cadmium (water only).
2. Testing was initiated 25 days following sediment collection, which was within the 8 week limit specified in ESI's Standard Operation Procedure (SOP).
3. The *Hyalella* sediment test was completed with one minor protocol deviation and two water quality deviations. The protocol deviation was that the test was started with 6 day old *Hyalella* whereas ESI's SOP states that "Amphipods will be between 7 and 8 days old." This protocol deviation likely did not affect the results of the test given the good control survival (average = 90%) and substantial growth (mean final weight = 0.625 mg/amphipod) of the amphipods, which was within one standard deviation of the mean final weight (0.714 mg/amphipod) for ESI's last 34 *Hyalella* tests.

Two water quality deviations occurred during testing. The first deviation was that temperatures fell below the protocol specified range of 23 ± 3 °C in all samples on days 1 and 2, in most samples on day 3 and a few samples on days 8 and 9. The sample temperatures were up to 2.05 °C below the lower specified limit. This is considered to be a minor water quality deviation as *Hyalella azteca* has a temperature tolerance range of 0 to 33°C (ASTM 2008a). The low temperatures on the first three days of the test may have slightly reduced the growth of the amphipods, but likely not enough to compromise the final results.

The second water quality deviation was that one sample (22800-010) registered a dissolved oxygen (DO) concentration of only 0.75 mg/liter on day 0. This is substantially less than the protocol specified lower limit of 2.5 mg/liter. However, based on the low value for this one sample, ESI initiated aeration of all samples immediately and DO values remained high in all samples for the duration of the test. Based on the fact that mean amphipod survival in this sample was 75% and not significantly different from the control survival, this transient low DO concentration likely did not affect the results of this test sample to any significant degree.

4. The reference toxicant LC50 for the cadmium positive control test was 0.015 mg/liter. This result was within ESI's control chart limits of 0.000 to 0.033 mg Cd/liter.
5. Negative control mean survival was 90.0%, which is greater than the SOP required mean survival of $\geq 80.0\%$. Mean amphipod larval dry weight at the end of the test was 0.625 mg/amphipod, which was substantially greater than the initial dry weight of 0.015 mg/amphipod, thus this is an acceptable test in terms of both survival and growth of the controls.
6. The maximum total ammonia concentration measured in the overlying water in any one sample for was 9.2 mg/liter total ammonia (test day 1, sample 222800-017). The total

ammonia measured in the pore water of this same sample on day 1 was 30 mg/liter. These values are below the 4-day LC50 concentrations of 35-200 mg/liter (pH dependent) reported by ASTM (2008a). There are no apparent limits for pore water ammonia for *Hyalella* sediment tests. However, given the elevated ammonia concentrations in this sample and the low survival of the amphipods (mean survival = 18.75%), the possibility that amphipods in this sample may have been stressed by ammonia cannot be ruled out.

7. Water hardness and alkalinity did not vary by more than 50%, which satisfies the protocol specification of less than 50% variability.
8. Replication was eight-fold for all samples as specified by ESI's SOP.
9. Data completeness was almost 100% (water quality measurements for two samples on day 15 are missing and survival, dry weight and biomass data were lost for one replicate of sample 22800-011). I also note some data recording errors in the CETIS database. Specifically, some data for sample 22800-011 have been recorded in the wrong columns. Values for replicates 3 through 7 should be shifted to the right one column for the survival, dry weight and dry biomass to reflect that the data for replicate 3 was lost (see pages 36 and 37 of ESI's report appendix). This same error also appears on the individual CETIS Analytical Report sheets for sample 22800-011). Note, however, that these recording errors should not have affected the calculation of mean survival, dry weight or biomass for this sample.
10. **Final QA determination:** All data are of acceptable quality and usable for any purpose. Caution should be used in interpreting the results of sample 22800-017 due to relatively high ammonia concentrations in the sediment pore water and overlying water.

Table 1. Summary of the *Hyalella azteca* sediment toxicity test.

Hyalella azteca sediment test:

Number of test samples, including lab control sediment: 25

Sediment holding time <8 weeks?: Yes.

Protocol deviations?: Yes. The test was started with 6 day old *Hyalella* whereas ESI's SOP states that "Amphipods will be between 7 and 8 days old."

Average laboratory control survival: 90.0%

Control growth acceptable?: Yes – mean final weight = 0.625 mg/amphipod

Reference toxicant LC50: 0.015 mg/liter (within the acceptable control chart range of 0.000-0.033 mg/liter).

Water quality parameter deviations: Yes. Test temperatures fell below the protocol specified range of 23 ± 3 °C by up to 2.05 °C in all samples on days 1 and 2, in most samples on day 3 and a few samples on days 8 and 9. Additionally, one sample (22800-010) registered a dissolved oxygen (DO) concentration of only 0.75 mg/liter on day 0. These two water quality deviations are considered transient and minor and should not have affected the results of the test.

Ammonia concentrations below critical limits?: Yes, but amphipods in one sample (22800-017) may have been stressed due to relatively high ammonia concentrations in the pore water and overlying water throughout the test.

QA reviewer conclusion: All data are of good quality and usable for any purpose. The water quality deviations likely did not compromise any of the results, with the possible exception that amphipods in sample 22800-017 may have been stressed by relatively high ammonia concentrations.

Review of the Freshwater Midge, *Chironomus dilutus*, 10-day Survival and Growth Toxicity Test (ESI Study 22802)

1. A *Chironomus dilutus* bioassay was conducted on Lower Passaic River sediment samples. The test was initiated on 7 December 2012 and included 24 test sediments, one laboratory negative control sediment and one positive (toxic) control test with cadmium (water only).
2. Testing was initiated 25 days following sediment collection, which was within the 8 week limit specified in ESI's Standard Operation Procedure (SOP).
3. The *Chironomus* sediment test was completed with two minor protocol deviations and two water quality deviations. The first protocol deviation was that the test animals were fed only 1.0 ml of 6g/liter Tetramin flake food instead of the ESI SOP specified 1.5 ml. This deviation likely did not affect the results of the test as the control growth was very good (from 0.40 mg at test initiation to 1.876 mg/larvae at end of test) and well above the required minimal final weight of 0.48 mg/larvae.

The second protocol deviation was that 11 midges were found in four of the replicates at the end of the test, which means that at least 11 midges were initially added to these replicates. This does not affect the results of these four samples since survival is reported in terms of percentages and the dry weight and biomass calculations were calculated based on an N of 11.

Two water quality deviations occurred during testing. The first deviation was that temperatures fell below the protocol specified range of 23 ± 3 °C by up to 0.8 °C in most samples on days 1 through 3. This is considered to be a minor water quality deviation as *Chironomus dilutus* has a reported temperature tolerance range of 0 to 35°C (ASTM 2008b). The slightly low temperatures on the first three days of the test may have slightly reduced the growth of the midge larvae, but likely not enough to significantly affect the final results.

The second water quality deviation was that one sample (22800-010) registered a DO concentration of only 2.08 mg/liter on day 0. This is less than the protocol specified lower limit of 2.5 mg/liter. However, based on this low value for this one sample, ESI initiated aeration of all samples immediately and DO values remained high in all samples for the duration of the test. Based on the fact that mean midge survival in this sample was 80% (but was significantly different from the control survival), this transient low DO concentration likely did not affect the results this sample to any great degree.

4. The reference toxicant LC50 for the cadmium positive control test was 4.97 mg/liter. This result was within ESI's control chart limits of 0.000 to 7.47 mg Cd/liter.

5. Negative control mean survival was 97.5%, which is greater than the SOP required mean survival of $\geq 70.0\%$. Mean midge larval dry weight at the end of the test was 1.876 mg/larva, which was well above the minimum weight requirement of ≥ 0.48 mg/larva.
6. The maximum ammonia concentration measured in the overlying water in one sample was 8.5 mg/liter total ammonia (test day 1, sample 22800-017). The total ammonia measured in the pore water of this same sample on day 1 was 26 mg/liter. These values are well below the 4-day LC50 concentrations of 82-370 mg/liter (pH dependent) reported by ASTM (2008b). There are no apparent limits for pore water ammonia for *Chironomus* sediment tests. However, given the elevated ammonia concentrations in this sample and the moderate survival of the midge larvae (mean survival = 78.75%, (significantly lower than the control survival), the possibility that midge larvae in this sample may have been stressed by ammonia cannot be ruled out.
7. For all batches, water hardness and alkalinity did not vary by more than 50%.
8. Replication was initially eight-fold for all samples as specified by ESI's SOP. However, an accident in the laboratory resulted in the loss of 15 dry weight/biomass samples when a tray of samples was dropped. This resulted in 14 samples only having replication of 7 and one sample having only 6 replicates for the dry weight & biomass endpoints. In one case the lost replicate was the only replicate with surviving midges, which negated any calculation of dry weight/biomass for that sample. However, that sample had virtually total mortality (3.75% mean survival), so the missing dry weight and biomass data are a moot point.

Loss of one of the 8 replicates (or 2 in one case), is deemed to be of little concern. Many testing programs routinely use from 4 to 6 replicates (e.g., Puget Sound Dredged Disposal Analysis Program has typically used 5 replicates for sediment testing). The statistical power for the affected samples should only be slightly less than those samples with 8 replicates.
9. Data completeness for these six tests was about 92.5% due to the loss of the 15 dropped dry weight/biomass samples. I also note one data recording error in the Dry Weight Data – AccuSeries Balance Output File. On page 29 of ESI's report appendix, a value of 213.35 for Total Weight appears for sample 22800-005, replicate 8. However, the midge survival in this sample was zero.
10. **Final QA determination:** Most data are of good quality and usable for any purpose. Caution should be used in interpreting the results of sample 22800-017 due to relatively high ammonia concentrations in the sediment pore water and overlying water. The loss of one or two replicates in some of the samples for the dry weight and biomass endpoints resulted in only a minor loss of statistical power for the affected samples.

Table 2. Summary of the *Chironomus dilutus* sediment toxicity test.

***Chironomus dilutus* sediment tests:**

Number of test samples, including lab control sediment: 25

Sediment holding time <8 weeks?: Yes

Average laboratory control survival: 97.5%

Control growth acceptable?: Yes – mean final weight = 1.876 mg/larva

Reference toxicant LC50: 4.97 mg Cd/liter (within the acceptable control chart range of 0.000-7.47 mg/liter).

Protocol deviations?: Yes. Test animals were fed only 1.0 ml of the 6g/liter Tetramin flake food instead of the ESI SOP specified 1.5 ml. This, however, did not appear to affect either survival or growth of the test animals to a significant degree. Addition of 11 test animals (instead of 10) to four of the test replicates is deemed to be of no consequence.

Water quality parameter deviations: Yes. Temperatures fell below the protocol specified range of 23 ± 3 °C by up to 0.8 °C in most samples on days 1 through 3. The slightly low temperatures on the first three days of the test may have slightly reduced the growth of the midge larvae, but likely not enough to significantly affect the final results.

Additionally, one sample (22800-010) registered a dissolved oxygen (DO) concentration of only 2.08 mg/liter on day 0. Based on the fact that mean midge survival in this sample was 80% (but was significantly different from the control survival), this transient low DO concentration likely did not affect the results this sample to any great degree.

Ammonia concentrations < critical limits?: Yes. However, the maximum ammonia concentration measured in the overlying water in one sample was 8.5 mg/liter total ammonia (test day 1, sample 22800-017). The total ammonia measured in the pore water of this same sample on day 1 was 26 mg/liter. These values are well below the 4-day LC50 concentrations of 82-370 mg/liter (pH dependent). However, given the elevated ammonia concentrations in this sample and the moderate survival of the midge larvae (mean survival = 78.75%, significantly lower than the control survival), the possibility that midge larvae in this sample may have been stressed by ammonia cannot be ruled out.

QA reviewer conclusion: Most data are of good quality and usable for any purpose. Caution should be used in interpreting the results of sample 22800-017 due to relatively high ammonia concentrations in the sediment pore water and overlying water. The loss of one or two replicates in some of the samples for the dry weight and biomass endpoints resulted in only a minor loss of statistical power for the affected samples.

QUALITY ASSURANCE REVIEW SUMMARY

Both sediment toxicity tests conducted by ESI are deemed to have generated good quality toxicity test data, with the exception of a number of samples noted above for elevated pore/overlying water ammonia concentrations. Most of the deviations noted by ESI in their two data reports and above in this report are associated with temperature and DO water quality deviations. Both of the test species used for these two tests are known to be quite hardy in terms of environmental variables (ASTM 2008a, b), including temperature and DO concentrations. It is on this basis that I have judged that the transient and generally short-term water quality deviations probably had little, if any, effect on the test results.

REFERENCES

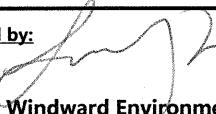
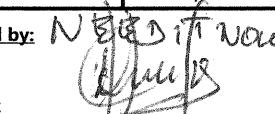
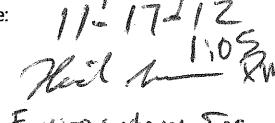
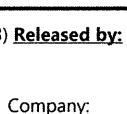
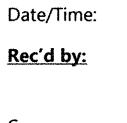
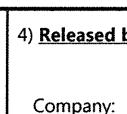
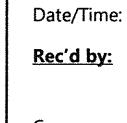
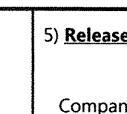
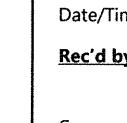
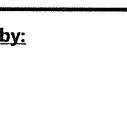
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- Windward Environmental. 2012. Quality Assurance Project Plan, Lower Passaic River Restoration Project. Surface sediment chemical analyses and benthic invertebrate toxicity and bioaccumulation testing. Addendum Number 5, October 26, 2012. Windward Environmental, Seattle, Washington.

APPENDIX F. CHAIN OF CUSTODY FORMS

CHAIN-OF-CUSTODY/TEST REQUEST FORM

Project/Client Name: **Passaic RI/FS Background and Ref Sediment**
 Project Number: **Task 39.1**
 Contact Name: **Karen Tobiason**
 Sampled By: **Thai Do**

Ship to: **EnviroSystems** # UPR-ES111712-1
 Attn: **Ken Simons** Shipping Date: **11.17.12**
 Shipper: **WDS Courier** Airbill Number: **N/A**
 Form filled out by: **T. Do** Turnaround requested: **Standard**

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Toxicity Testing	Test(s) Requested (check test(s) required)					Comments / Instructions [Jar tag number(s)]
11.12.12	1013	UPRT18I	2	Sed	X						
11.12.12	1217	UPRT18H	2	Sed	X						
11.12.12	1321	UPRT18J	2	Sed	X						
11.12.12	1437	UPRT18K	2	Sed	X						
11.13.12	0820	UPRT19J	2	Sed	X						
11.13.12	0946	UPRT19K	2	Sed	X						
11.13.12	1055	UPRT19L	2	Sed	X						
11.13.12	1159	UPRT19M	2	Sed	X						
11.13.12	1330	UPRT20A	2	Sed	X						
Total Number of Containers			18/48	Purchase Order / Statement of Work #2012-0042							
1) Released by:	2) Released by:	3) Released by:	4) Released by:	5) Released by:							
 Company: Windward Environmental Date/Time: 11.17.12/ 10:30 AM <u>Rec'd by:</u> 	 Company: Need it Now Courier Date/Time: 11.17.12/ 8:30 AM <u>Rec'd by:</u> 	 Company: EnviroSystems Inc. Date/Time: 11/17/12 1305 <u>Rec'd by:</u> 	 Company: EnviroSystems Inc. Date/Time: 	 Company: EnviroSystems Inc. Date/Time: 	 Company: EnviroSystems Inc. Date/Time: 						

To be completed by Laboratory upon sample receipt:

Date of receipt: 11/17/12	Laboratory W.O. #:
Condition upon receipt: Acceptable	Time of receipt: 1305
Cooler temperature: 40C	Received by: Kirk Cram

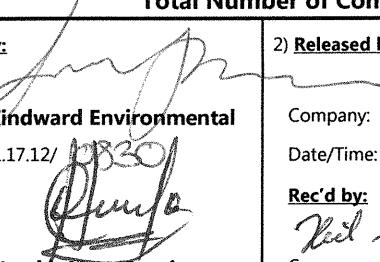
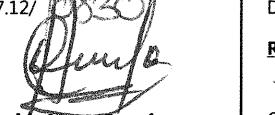
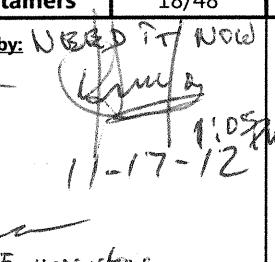
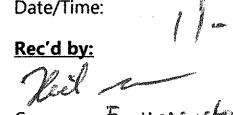


200 West Mercer Street
 Suite 401
 Seattle, WA 98119
 Tel: (206) 378-1364
 Fax: (206) 217-9343

CHAIN-OF-CUSTODY/TEST REQUEST FORM

Project/Client Name: **Passaic RI/FS Background and Ref Sediment**
 Project Number: **Task 39.1**
 Contact Name: **Karen Tobiason**
 Sampled By: **Thai Do**

Ship to: **EnviroSystems** # UPR-ES111712-2
 Attn: **Ken Simons** Shipping Date: **11.17.12**
 Shipper: **WDS Courier** Airbill Number: **N/A**
 Form filled out by: **T. Do** Turnaround requested: **Standard**

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Toxicity Testing	Test(s) Requested (check test(s) required)					Comments / Instructions [Jar tag number(s)]
11.13.12	1441	UPRT20B	2	Sed	X						
11.14.12	0815	UPRT20C	2	Sed	X						
11.14.12	0914	UPRT20D	2	Sed	X						
11.14.12	1112	UPRT20E	2	Sed	X						
11.14.12	1149	UPRT20F	2	Sed	X						
11.14.12	1252	UPRT20G	2	Sed	X						
11.14.12	1352	UPRT21A	2	Sed	X						
11.15.12	0819	UPRT21B	2	Sed	X						
11.15.12	0917	UPRT21C	2	Sed	X						
Total Number of Containers			18/48	Purchase Order / Statement of Work #2012-0042							
1) Released by:	2) Released by:	3) Released by:	4) Released by:	5) Released by:							
 Company: Windward Environmental Date/Time: 11.17.12/ 0830 Rec'd by: 	 Company: Need it Now Courier Date/Time: 11.17.12/ 0830 Rec'd by: 										

To be completed by Laboratory upon sample receipt:

Date of receipt: 11/17/12	Laboratory W.O. #:
Condition upon receipt: Acceptable	Time of receipt: 1305
Cooler temperature: 40C	Received by: Kirk Cram



200 West Mercer Street
 Suite 401
 Seattle, WA 98119
 Tel: (206) 378-1364
 Fax: (206) 217-9343

CHAIN-OF-CUSTODY/TEST REQUEST FORM

Project/Client Name: **Passaic RI/FS Background and Ref Sediment**
Project Number: **Task 39.1**
Contact Name: **Karen Tobiason**
Sampled By: **Thai Do**

Ship to:	EnviroSystems	# UPR-ES111712-3
Attn:	Ken Simons	Shipping Date: 11.17.12
Shipper:	WDS Courier	Airbill Number: N/A
Form filled out by:	T. Do	Turnaround requested: Standard

WindWard
environmental LLC

200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: (206) 378-1364
Fax: (206) 217-9343

28 Day *Hyalella azteca* Survival and Growth Sediment Toxicity Lower Passaic River Remedial Investigation, ESI Study 22801, January 2013

To be completed by Laboratory upon sample receipt:

Date of receipt:: <u>9/17/12</u>	Laboratory W.O. #:
Condition upon receipt: <u>Acceptable</u>	Time of receipt: <u>1305</u>
Cooler temperature: <u>4°C</u>	Received by: <u>Karen Crane</u>

APPENDIX G. PROTOCOL MODIFICATION FORMS

Protocol Modification Form: PMF No. 1 for Benthic QAPP Addendum No. 5

Project Name and Number:

Passaic RI 09.58.02.41

Material to be Sampled:

Sediment

Measurement Parameter:

Relocating SQT sediment sampling locations

Standard Procedure for Field Collection & Laboratory Analysis (cite reference):

Worksheet No. 18 in Benthic QAPP Addendum No. 5, Proposed Sampling Locations and Methods/SOP Requirements Table, and Benthic QAPP Figures 1a – 1c (map of target sampling locations)

Reason for Change in Field Procedure or Analysis Variation:

Sampling locations were moved during the 2012 benthic field effort for the collection of background-reference sediment samples upstream of Dundee Dam. Locations were moved from proposed locations as presented in Worksheet No. 18 of Benthic QAPP Addendum No. 5 for one of the following reasons:

1. QAPP target location was inaccessible by boat.
2. Substrate at QAPP target location was too rocky to obtain good grab sample.

Variation from Field or Analytical Procedure:

Table 1 provides the new coordinates for the sediment quality triad (SQT) locations that were moved and the rationale for the relocation. The final locations are shown on Figure 1 attached to this PMF. Figure 2 provides the proposed locations for the sediment samples that will be collected for chemistry-only sediment samples (chemistry-only sediment sample collection is scheduled to begin November 26, 2012).

Special Equipment, Materials or Personnel Required:

None

Initiator's Name:

D.B.DL. Date: 11/19/12

Project Manager:

Krisi Sabin Date: 11/19/12

QA Manager:

Jad Hershler Date: 11/19/12

USEPA Authority:

Date: _____

Table 1. SQT Sampling Locations to Establish Freshwater Background-Reference Conditions

Sampling Location	New Location?	Rationale for Moving Location	Easting (X) ^{a, b}	Northing (Y) ^{a, b}	RM	Data Collection Method	Analyses	Rationale for Monitoring Location
UPRT18H	Yes	Original location (UPRT18H) was below obstruction (pipe crossing river) and inaccessible by boat	594662	747963	17.6	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Targeted nearshore location; field-measured grain size from October 2012 reconnaissance 42% coarse, 58% fines
UPRT18I	Yes	Original location (UPRT18I) was below obstruction (pipe crossing river) and inaccessible by boat	594567	747742	17.6	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Targeted coarse grain sediment; field-measured grain size from October 2012 reconnaissance 82% coarse, 18% fines
UPRT18J	Yes	Original location in side channel (UPRT18J) was too shallow for boat access; moved to main stem	594284	748072	17.6	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area between Dundee Dam and I-80; field-measured grain size from October 2012 reconnaissance 92% coarse, 8% fines
UPRT18K	Yes	Original location in side channel (UPRT18K) was too shallow for boat access; moved to main stem	594500	749655	17.9	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area between Dundee Dam and I-80; field-measured grain size from October 2012 reconnaissance 90% coarse, 8% fines
UPRT19J	Yes	Original location in side channel (UPRT19K) was too shallow for boat access; moved to main stem	594891	750287	18.1	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area between Dundee Dam and I-80; field-measured grain size from October 2012 reconnaissance 24% coarse, 76% fines
UPRT19K	Yes	Original location in side channel (UPRT19J) was too shallow for boat access; moved to main stem	594853	750827	18.2	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area between Dundee Dam and I-80; field-measured grain size from October 2012 reconnaissance 52% coarse, 48% fines

Table 1. SQT Sampling Locations to Establish Freshwater Background-Reference Conditions

Sampling Location	New Location?	Rationale for Moving Location	Easting (X) ^{a, b}	Northing (Y) ^{a, b}	RM	Data Collection Method	Analyses	Rationale for Monitoring Location
UPRT19L	No	na	593691	752156	18.5	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area between Dundee Dam and I-80; field-measured grain size from October 2012 reconnaissance 100% coarse
UPRT19M	No	na	593521	753134	18.7	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area between Dundee Dam and I-80; field-measured grain size from October 2012 reconnaissance 100% coarse
UPRT20A	No	na	593933	754562	19.0	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area above I-80; field-measured grain size from October 2012 reconnaissance 14% coarse, 86% fines
UPRT20B	No	na	593792	754732	19.0	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area above I-80; field-measured grain size from October 2012 reconnaissance 18% coarse, 82% fines
UPRT20C	No	na	593704	755904	19.3	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area above I-80; field-measured grain size from October 2012 reconnaissance 34% coarse, 66% fines
UPRT20D	Yes	Original location (UPRT20D) was in middle of boat launch at Elmwood Park	593934	756211	19.3	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Target fine-grain sediment at location with human access points along river; field-measured grain size from October 2012 reconnaissance 36% coarse, 64% fines

Table 1. SQT Sampling Locations to Establish Freshwater Background-Reference Conditions

Sampling Location	New Location?	Rationale for Moving Location	Easting (X) ^{a, b}	Northing (Y) ^{a, b}	RM	Data Collection Method	Analyses	Rationale for Monitoring Location
UPRT20E	No	na	593573	757471	19.6	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area above I-80; field-measured grain size from October 2012 reconnaissance 20% coarse, 80% fines
UPRT20F	No	na	593318	757805	19.6	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area above I-80; field-measured grain size from October 2012 reconnaissance 20% coarse, 80% fines
UPRT20G	Yes	Original location was above RM 21.3 where water is shallow and contains large rocks and is inaccessible by boat	593713	758634	19.8	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area above I-80; field-measured grain size from October 2012 reconnaissance 90% coarse, 10% fines
UPRT21A	No	na	594215	759390	20.0	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area above I-80; field-measured grain size from October 2012 reconnaissance 48% coarse, 52% fines
UPRT21B	Yes	Moved to provide finer grain size; field-measured grain size for original location (UPRT21B) during October 2012 reconnaissance was 80% coarse, 20% fines	594304	759819	20.0	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area above I-80; field-measured grain size from October 2012 reconnaissance 50% coarse, 50% fines
UPRT21C	No	na	594388	760379	20.2	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area above I-80; field-measured grain size from October 2012 reconnaissance 88% coarse, 12% fines

Table 1. SQT Sampling Locations to Establish Freshwater Background-Reference Conditions

Sampling Location	New Location?	Rationale for Moving Location	Easting (X) ^{a, b}	Northing (Y) ^{a, b}	RM	Data Collection Method	Analyses	Rationale for Monitoring Location
UPRT21D	Yes	Substrate at original location (UPRT21F) was rocky; moved location down river	593893	760965	20.3	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area above I-80; field-measured grain size from October 2012 reconnaissance 86% coarse, 14% fines
UPRT21E	Yes	Substrate at original location (UPRT21D) was rocky; moved location down river	593432	761295	20.4	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area above I-80; field-measured grain size from October 2012 reconnaissance 100% coarse, 0% fines
UPRT21F	No	Not moved; original ID number (UPRT21E) was changed to provide consecutive number sequence	592798	761474	20.6	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area above I-80; field-measured grain size from October 2012 reconnaissance 70% coarse, 30% fines
UPRT21G	Yes	Substrate at original location (UPRT21G) was rocky; moved location down river	591953	761465	20.7	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Randomly selected for spatial coverage of area above I-80; field-measured grain size from October 2012 reconnaissance 92% coarse, 8% fines
UPRT22A	No	na	591076	763069	21.1	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Potential human access location adjacent to Fairlawn Park; field-measured grain size from October 2012 reconnaissance 66% coarse, 34% fines
UPRT22B	No	na	590985	763326	21.1	Grab sampler	Toxicity test, sediment chemistry, taxonomy	Potential human access location adjacent to Fairlawn Park; field-measured grain size from October 2012 reconnaissance 96% coarse, 4% fines

^a Coordinates replace the target coordinates of these locations presented in Worksheet 18 of the Benthic the QAPP. Coordinates provided were from the first successful grab sample for a given location.

^b New Jersey State Plane (US survey feet).

ID – identification

na – not applicable

RM – river mile

SQT – sediment quality triad